A Catalogue of Tertiary Spores and Pollen from India

Diamond Jubilee Special Publication

Birbal Sahni Institute of Palaeobotany
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A Catalogue of Tertiary Spores and Pollen from India
A Catalogue of Tertiary Spores and Pollen from India
(1989-2004)
Total number of genera 521; Total number of species 1172
(excluding taxa that are nomina nuda or invalid combinations or where no binomials are given)
FOREWORD

The task to collate, edit, update and create a systematic inventory of fossil plants known from Indian sedimentary successions was first initiated by scientists of the Birbal Sahni Institute of Palaeobotany after the Silver Jubilee Celebrations in November, 1971. Though it was a daunting task as the information was scattered in various journals and many other publications, this effort materialized with the publication of "A Catalogue of Indian Fossil Plants" by R. N. Lakhanpal et al. in 1976. This single volume catalogue included all plant mega- and microfossil records published from 1821 to 1970. As enormous data had subsequently gathered in the next two decades, another Catalogue was released during the Birbal Sahni Birth Centenary Celebrations in 1991. However, due to the wealth of the available data impossible to be incorporated in a single compendium, 11 Fascicules on different fossil groups and/or geologic time span were prepared, each authored by subject experts from the Institute.

In connection with the Diamond Jubilee Celebrations of the Institute this year, the idea to again update the information came up during discussions in our group meetings sometimes in January, 2006. Despite the short notice and a tall order, several of my Institute colleagues readily volunteered to take up the uphill task. It is indeed heartening to see that these Catalogues/Atlases have been completed in record time. I wish to express my most sincere appreciation to all those who contributed their energy and skill in giving shape to these individual compilations.

The present book, "A Catalogue of Tertiary Spores and Pollen from India: 1989-2004" by R. K. Saxena & G. K. Trivedi, is a welcome addition to the list of Institute’s publications. The catalogue includes all records of spores and pollen from the Indian Tertiary sediments published after 1988 up to 2004, with each entry containing name of the species, its author(s), year of publication, page number(s), reference to plate(s), figure(s) and text-figure(s), age and name of the horizon, locality and names of district and state where it is situated. Such information will surely be useful in the study and identification of Tertiary spores and pollen and in deducing their horizontal and vertical distribution for biostratigraphic application. I believe this compendium would prove equally useful for researchers and scholars in Academia and Industry.

October 16, 2006
Dr. N. C. Mehrotra
Director
Birbal Sahni Institute of Palaeobotany
During the last five decades, records of fossil plants reported from India have been rapidly increasing due to the intensive research activities at the Birbal Sahni Institute of Palaeobotany and other palaeobotanical centres in the country. The first catalogue, incorporating all plant fossil records from India published from 1821 to 1970, was published by Lakhanpal et al. (1976). This was followed by the publication of the second catalogue in 1991, which contains all plant fossil records from India published from 1971 to 1988 and was published in the form of 11 fascicules, each authored by different scientists. Of these, “A Catalogue of Fossil Plants from India-Part 5A. Cenozoic (Tertiary) Spores and Pollen” (Saxena 1991) includes tertiary spores and pollen.

The present catalogue is an extension of the above and is expected to be useful in palynological studies of the Tertiary sediments. Since the earlier catalogues (Lakhanpal et al. 1976; Saxena 1991) incorporated palynofloral records up to 1988, Tertiary spores-pollen published after 1988 up to 2004 are included in the present catalogue. In order to include all available records, published during the above period, taxa that are nomina nuda or invalid combinations or where no binomials are given have also been included. Junior homonyms are also included without proposing replacement names therefor. In case replacement name of a junior homonym is already published, both are given linked with an equal mark (=).

The entries are made under three paragraphs, the first and second beginning from extreme left margin pertain to genus and species respectively, and the third, beginning with indented margin, pertains to synonyms and basionyms, if any. Spores and pollen records are arranged alphabetically according to their generic names. Where generic names are not known, supra-generic names are used. Under each genus, its species are also arranged alphabetically.

The genus entry contains name of the genus in capital letters - validly published in bold face and nomina nuda in italics, full surname(s) of its author(s) and family or infratrama or taxon of higher rank. Orthography and authorship of genera have been checked from their original valid
publication and have been corrected accordingly, wherever necessary. However, where original publication could not be procured, the same have been given in accordance with Genera File of Fossil Spores (Jansonius & Hills, 1976, 1977, 1978, 1979, 1981, 1982, 1987, 1992) and Index Nominum Genericorum (Farr et al. 1979, 1986). Authorship of the genus is ascribed to the person(s) who first validly published it. Where a genus is not validly published in its first appearance, name of its author(s) is followed by the author(s) who validated it. When a genus is published jointly by two authors, names of both are cited, linked by an ampersand (Rec. 46C1, I.C.B.N., Greuter et al. 2000) but in case of more than two authors only first author is cited followed by et al. (Rec. 46C2, I.C.B.N., Greuter et al. 2000). This holds good for species too.

The species entry contains name of the species, its author(s), year of publication, page number(s), reference to plate(s), figure(s) and text-figure(s), age (in capital letters) and name of the horizon in parentheses, locality and names of district and state where it is situated. Where a particular species has again been reported either from the same or from other localities, all such details are mentioned in chronological order.

The entries of synonyms and basionyms are given under the respective species, wherever required. Cross references of synonyms and basionyms are given at their respective alphabetical positions, with older name in italics and present one in bold face. Synonyms, basionyms and taxa, that are nomina nuda or invalid combinations, are given in italics. The junior homonym species are given separately alongwith their records next to their respective senior homonyms and records thereof. Terminations of the specific epithets, based on personal names, have been corrected, wherever required, in accordance with Article 60.11 and Rec.60C of I.C.B.N., (Greuter et al. 2000). Authorship of the species has been checked from its original valid publication, as far as possible, and corrected accordingly, wherever wrongly given.

The geological ages are generally given as per record of a particular species, even if they are in variance with the generally accepted age of the horizon. Geographical names have been corrected according to their present
application. Places published with varying orthography have been changed in order to bring uniformity and avoid confusion, e.g. Ankleswar is changed to Ankleshwar; Bhaunagar to Bhavnagar; Cutch and Kachchh to Kutch; Dehradun District, Uttar Pradesh to Dehradun District, Uttaranchal; Nangwalibra to Nongwal Bibra; Palamu District, Bihar to Palamu District, Jharkhand; Tarkesvar and Tarkeswar to Tarkeshwar; Kundara to Kundra; and Varkalla and Warkali to Varkala, etc.

Full bibliographical details are given of all the papers cited in the Catalogue, for easy access to relevant literature for consultation.

The authors express their gratefulness to the Director, Birbal Sahni Institute of Palaeobotany, Lucknow for facilities and for permitting to publish the Catalogue.

R. K. Saxena
G. K. Trivedi
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CATALOGUE


**ABIESPOLLENITES** Thiergart in Raatz, *PINOSACCITI.*

**Abiespollenites cognatus** Kar. Kar 1990a: 176, pl 4, fig 65, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 236, 237, 240, MIDDLE OLIGOCENE-EARLY MIOCENE (Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Sarkar et al. 1994: 201, pl 2, fig 23, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2002: 21, pl 2, fig 15, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2002a: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmasala and Siwalik), Dharmasala and Nurpur areas, Kangra District, Himachal Pradesh; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

**Abiespollenites surmaensis** Rao. Saxena & Rao 1996: 46, pl 2, fig 5, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Rao & Patnaik 2001: 270, pl 2, fig 4, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

**Abiespollenites sp.** Singh & Tripathi 1990: 329, MIOCENE (Siwalik sediments), Arunachal Pradesh.

**Abiespollenites sp.** Misra et al. 1996: 95, 96, EARLY MIOCENE (Baghmara Formation), Tura-Dalu Road Section along Bugi River and in the vicinity of Baghmara, Garo Hills, Meghalaya.


**ABIETINEAEPOLLENITES** Potonié ex Delcourt & Sprumont, *PINOSACCITI.*

**Abietineaepollenites sp.** Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya (Reworked).

**ACANTHOTRICOLPITES** Kar, *TRIPORINES.*

**Acanthotriclepites brevicolpus** Kar 1990a: 181, pl 8, figs 111-113, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole
No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Mandaokar 1996b: 42, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 181, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

**Acanthotricolpites brevispinosus** Saxena & Khare 2004: 74, 85, pl 2, fig 12, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Acanthotricolpites bulbospinosus** Kar. Singh & Misra 1991c: 224, pl 1, fig 8, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Kar & Bhattacharya 1992: 252, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Singh et al. 1992: 56, pl 1, fig 8, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Mandaokar 1993: 139, pl 1, fig 33, pl 2, fig 32, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 186, pl 1, fig 14, pl 2, fig 27, TERTIARY, subsurface sediments in Upper Assam; Misra & Kapoor 1994: 152, pl 1, figs 6-7, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Mandal et al. 2003: 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aldki Formation), Barmer Basin, Rajasthan.

**Acanthotricolpites intermedium** Singh & Misra 1991c: 224, pl 2, figs 10-12, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

**Acanthotricolpites karii** Saxena & Khare 2004: 74, 86, pl 2, figs 17-18, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Acanthotricolpites kutchensis** (Venkatachala & Kar) Singh & Misra 1991c: 224, 226, pl 2, figs 3-6, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Samant & Tapaswi 2001: 128, pl 1, figs 6-7, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Mandal et al. 2003: 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aldki Formation), Barmer Basin, Rajasthan.


**Acanthotricolpites complexus** Singh & Misra 1991c: 226-227, pl 2, figs 7-9, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aldki Formation), Barmer Basin, Rajasthan.
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EOCENE, Seam Nos. 1, 2 and 3, Rekmangiri Coalfield, Garo Hills, Meghalaya; Mandaokar 1993: 139, pl 1, figs 12, 18, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Rao 1995a: 327, pl 3, fig 12, EOCENE-EARLY MIocene, Kalarakod Borehole, Alleppey District, Kerala; Mandal et al. 1996: 80, pl 1, fig 18, LATE PALAEOCENE-EARLY EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao & Rajendran 1996: 66, MIocene, Cannanore District, Kerala; Mandal 1997: 100, pl 1, fig 10, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Mandaokar 2000a: 181, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Saxena 2000c: 163, pl 2, fig 2, MIocene (Sindhudurg Formation), Pavli Mine at Redi, Sindhudurg District, Maharashtra; Saxena & Sarkar 2000: 257, pl 2, fig 7, MIDDLE EOCENE (Siju Formation), Simsang River Section near Siju, South Garo Hills District, Meghalaya; Sharma 2000: 52, pl 1, fig 12, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan; Trivedi & Saxena 2000: 275, pl 1, fig 2, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Kar & Sharma 2001: 129, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Mandaokar 2002b: 21, pl 1, figs 11, 14, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

Couperipollis kutchensis Venkatachala & Kar. Kar 1990a: 176, 177, MIocene (Surma and Tipam groups), Rohkha Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Shanmukappa & Koshal 1993: 195, 201, EARLY-MIDDLE EOCENE (Cambay Shale and Ankleshwar formations), Gandhar area, Broach Depression, Cambay Basin, Gujarat.

Acanthotricolpites microreticulatus Saxena & Khare 2004: 74, 85, pl 2, figs 10-11, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Acanthotricolpites multitypicus Singh & Misra 1991c: 226, pl 2, figs 1-2, MIocene (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

Acanthotricolpites robustus Saxena & Khare 2004: 74, 86, pl 2, figs 8, 16, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Acanthotricolpites tiruchirapalliensis Saxena & Khare 2004: 74, 85, pl 2, figs 2, 15, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Acanthotricolpites sp. Kar 1990a: 177, MIocene (Surma and Tipam groups), Rohkha Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

ACANTHOTRILETES Naumova ex Naumova, APICULATI.

Acanthotriletes triangulatus Kumar & Takahashi 1991: 581-582, pl 13, fig 8, pl 14, fig 10, pl 16, fig 6, text-fig 17, MIOCENE (Upper Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 72, 84, 94, pl 39, fig 8, pl 40, figs 11-12, 15, pl 41, fig 4, pl 45, fig 5, pl 46, fig 3, MIOCENE-PLIOCENE (Bhuban, Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam.


Acanthotriletes sp. Kumar 1994: 22, pl 2, fig 5, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.


ACERPOLLENITES in Misra & Kapoor. Nomen nudum.


ACROSTICHUMSPORITES Kar, APICULATI.

Acrostichumsporites meghalayaensis Kar 1992a: 34, pl 1, figs 1-9, EARLY PALAEOCENE (Langpar Formation), Therriaghat, Umsohryngkew River Section, Khasi Hills, Meghalaya.

AEQUITRIRADITES Delcourt & Sprumont, HILATES.

Aequitriradites dubius Delcourt & Sprumont. Mandal et al. 1996: 80, pl 1, fig 28, LATE CRETACEOUS, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal et al. 2003: 102, 104, pl 3, fig 2, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Aequitriradites spinulosus (Cookson & Dettmann) Cookson & Dettmann. Kar 1990a: 179, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Aequitriradites sp. Chandra & Kumar 1998: 64, pl 2, fig 19, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean (Reworked).

AGLAOREIDIA Erdtman, MONOPORINES.

Aglaoreidia sp. Singh & Sarkar 1994: 50, pl 1, fig 10, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.

ALANGIOPOLLIS Krutzsch, PTYCHOTRIPORINES.


Alangiopollis sp. Mandal et al. 2003: 104, 106, pl 1, fig 1, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

Alangium type pollen. Srivastava & Bhattacharyya 2000: 375, pl 1, fig 6, EARLY TERTIARY, Kimin-Ziro Road Section, Lower Subansiri District, near
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Riliu village, West Siang District and Pasighat to Reungging Section, East Siang District, Arunachal Pradesh.

ALBERTIPOLLENITES Srivastava, TRIPTYCHES.


Tricolpopites aquifoliaceaeformis Biswas 1962: 38, pl 5, fig 18, EARLY EOCENE (Tura Formation), Tura-Dalu Road Section, Garo Hills, Meghalaya.

Albertipollenites baculatus (Jain et al.) Mandal & Rao 2001: 344.


Albertipollenites gracilis (Salujha et al.) Mandal & Rao 2001: 344.


Albertipollenites karii Mandal & Rao 2001: 344, 346, pl 5, figs 8-9, LATE PALAEOCENE (Lakadong Sandstone), Shillong-Cherrah Road Section, Meghalaya.

Albertipollenites kumari Mandal & Rao 2001: 346, pl 4, figs 6-8, LATE PALAEOCENE (Lakadong Sandstone), Shillong-Cherrah Road Section, Meghalaya.


Tricolpites crassisexinus Venkatachala & Rawat 1973: 244, pl 4, fig 9, OLIGOCENE-MIOCENE, Cauvery Basin, Tamil Nadu.
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*Retitricolpites medireticulatus* Mathur 1966: 41, pl 1, fig 18, PALAEOCENE (Supratrappeans), Kutch District, Gujarat.


*Tricolopites proboscideus* Biswas 1962: 42, pl 8, fig 44, EARLY EOCENE (Tura Formation), Tura-Dalu Road Section, Garo Hills, Meghalaya.

**Albertipollenites retitubaculatus** (Saxena) Mandal & Rao 2001: 348, pl 3, figs 4-6, PALAEOCENE (Matanomadh Formation), Kutch District, Gujarat; Rao 1995a: 328, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Tripatthi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Rao & Nair 1998: 52, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala; Mandaokar 2000c: 43, pl 1, fig 8, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Saxena & Khare 2004: 75, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Albertipollenites robustus** (Sah & Kar) Mandal & Rao 2000: 348, pl 1, figs 2-3, EARLY EOCENE (Naredi Formation), Kutch District, Gujarat.


**ALISPORITES** Daugherty, PINOSACCITI.

**Alisporites grandis** (Cookson) Dettmann. Mandal et al. 1996: 80, pl 1, fig 23, LATE CRETACEOUS, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal et al. 2003: 100, 102, 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**Alisporites grandis** Saksena [non (Cookson) Dettmann 1963] = **Alisporites saksenae** Saxena.

**Alisporites saksenae** Saxena 1993: 195.

**Alisporites sp.** Salujha et al. 1991: 66, pl 1, fig 27, NEOGENE, Adamtila Well-A, Cachar District, Assam.

**Alisporites sp.** Misra & Kapoor 1994: 152, pl 1, fig 19, PALAEOCENE-EARLY EOCENE (Subathu and Basal Darmsala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh.

**Alisporites sp.** Gupta et al. 2003: 212, PALAEOCENE-EOCENE, Ganga Basin.

**Alisporites sp.** Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**ALNIPOLLENITES** Potonié ex Potonié, POLYPORINES.

**Alnipollenites verus** (Potonié) Potonié. Banerjee & Nandi 1994: 219, pl 1, fig 14, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasi, Aizawl District, Mizoram; Mitra et al. 2000: 126, pl 1, fig 31, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimituipiui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.
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Alnipollenites sp. Hait & Banerjee 1994: 118, pl 3, fig 53, LATE MIOCENE, around Champhai, Mizoram.

ALSOPHILIDITES Cookson ex Potonié, LAEVIGATI.

Alsophilidites kerguelensis Cookson ex Potonié. Singh & Sarkar 1994: 50, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Mandaokar 2000b: 183, pl 1, fig 1, LATE OLIGOCENE (Tikak Parbat Formation), Jeyapore Colliery, Dilli-Jeyapore Coalfields, Dibrugarh District, Assam.

Alsophilidites psilatus Kumar, Mandal et al. 1996: 78, pl 1, fig 10, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands.

Alsophilidites spp. A-B. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

Alsophilidites spp. Kar 1990b: 234, 237, MIDDLE-LATE OLIGOCENE (Jenam and Renji formations), Silchar-Haflong Road Section, Assam.

Alsophilidites sp. Kumar & Takahashi 1991: 582, pl 13, fig 7, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 73, pl 35, fig 8, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (described as Alsophilidites sp. A).

Alsophilidites sp. Kar & Bhattacharya 1992: 256, pl 1, fig 14, EARLY EOCENE, Guja Dam Section and Akri lignite, Kutch District, Gujarat.

Alsophilidites sp. Kar et al. 1994: 185, pl 1, fig 1, TERTIARY, subsurface sediments in Upper Assam.

Alsophilidites sp. Kumar 1994: 84, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Alsophilidites sp. Mitra et al. 2000: 126, pl 1, fig 11, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

AMARANTH/CHENOPODIACEAE (pollen).

AMTASPORAS Sarkar & Singh, APICULATI.


ANACOLOSIDITES Cookson & Pike, TRIPORINES.


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Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, pl 1, fig 11, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Anacolosidites sp. Mehrotra et al. 2000: 153, LATE EOCENE (Kopili Formation), Upper Assam.

Angiosperm pollen type Singh & Sarkar 1994: 50, pl 1, fig 21, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.

Angiosperm pollen type 1. Sarkar et al. 1994: 202, pl 2, fig 24, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

Angiosperm pollen type 2. Sarkar et al. 1994: 202, pl 1, fig 7, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

ANGULOCOLPORITES Kar, PTYCHOCYPORINES.

Angulocolporites microreticulatus Kar. Kar & Bhattacharya 1992: 251, pl 2, fig 32, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Mandal 1997: 100, pl 2, fig 2, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.


Anonidium-like pollen. Ambwani & Kar 2000: 219-220, pl 1, fig 1, PALAEOCENE (Tura Formation), Nongwal Bibra Section, Garo Hills, Meghalaya.

ANNUTRIPORITES González Guzmán, TRIPORINES.

Annutriporites iversenii (van der Hammen) González Guzmán. Kumar & Takahashi 1991: 537, pl 5, fig 19, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam (wrongly spelt as Annutriporites inversenii); Kumar 1994: 24, pl 19, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

Annutriporites sp. Kumar 1994: 24, pl 20, fig 8, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

APICULATISPORIS Potonié & Kremp, APICULATI.


AQUILAPOLLENITES Rouse, ANGIOSPERMAE.


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ARACEAEPITES Biswas, MONOPTYCHES.

Araceaepites wodehouseii Biswas = Neocouperipollis wodehousei (Venkatachala & Kar) Saxena & Khare.

ARALICEOIPOLLENITES Potonié ex Potonié, PROLATI.


Araliaceoipollenites euphorii Potonié. Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Mitra et al. 2000: 126, pl 1, fig 26, NEOCENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

Araliaceoipollenites reticulatus Dutta & Sah. Banerjee & Nandi 1994: 219, pl 1, fig 13, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Mitra et al. 2000: 79, LATE CRETACEOUS, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal et al. 1996: 80, LATE CRETACEOUS, mud volcano in Baratang Island, Andaman and Nicobar Islands; Chandra & Kumar 1998: 65, pl 3, fig 3, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan,
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Indian Ocean; Trivedi & Saxena 2000: 275, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Mandal et al. 2003: 100, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked); Mandal & Vijaya 2004: 497, LATE OLIGOCENE-EARLY MIocene, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

Araucariacites indicus (Singh et al.) Kumar (non Dev 1961) = Araucariacites singhii Saxena.

Araucariacites singhii Saxena 1993: 196.

Araucariacites indicus (Singh et al.) Kumar 1973 (non Dev 1961): 121, pl 6, fig 131-132, LATE JURASSIC (Jabalpur Formation), Harad River near Hathnapur, Narsinghpur District, Madhya Pradesh.

Laricoidites indicus Singh et al. 1964: 299, pl 8, figs 111-112, EARLY CRETACEOUS (Bhuj Series), Ghuneri, Kutch District, Gujarat.


Araucariacites sp. Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya (Reworked).

Araucariacites sp. Sarkar & Prasad 2000b: 147, LATE PRESPAINT MIDDLE LUTETIAN (Subathu Formation), west bank of Ghagger river near Kharak village, Morni Hills, Haryana.


Araucariacites sp. Mandal et al. 2003: 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Araucariapollenites Reyré, ALETES.

Araucariapollenites sp. Mandal et al. 2003: 102, pl 2, fig 12, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

ARCUATIPOLLENITES Teteryuk in Araslanova & Teteryuk, TRILETES.


ARECIPITES Wodehouse, MONOPTYCHES.


Arecipites communis Mathur & Chopra. Kumar & Takahashi 1991: 537-538, pl 6, fig 13, pl 11, fig 12, LATE OLIGOCENE and LATE EARLY-MIDDLE MIocene (Renji and Middle Bhuban formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 43, 57, 97, pl 22, fig 3, pl 32, fig 8, LATE OLIGOCENE-PLIOCENE (Renji, Bhuban and Dupitila formations), Silchar-Haflong Road Section, Assam.

Arecipites indicus Venkatachala & Rawat. Kumar & Takahashi 1991: 538, pl 1, fig 14, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 14-15, 24, pl 4, fig 5, pl 5, fig 9, pl 14, fig 5, pl 15, fig 8, pl 16, fig 12, EARLY-MIDDLE OLIGOCENE (Laisong and Jenam formations), Silchar-Haflong
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Road Section, Assam; Misra & Kapoor 1994: 153, pl 2, fig 35, PALAEOCENE-EARLY EOCENE (Subathu and Basal Dharmsala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh; Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin.


Arecipites matanomadhensis (Saxena) Kar. Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.


Arecipites wodehousei Samant & Phadtare 1997: 16, pl 3, figs 3-4, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.


Arecipites sp. Ramanujam et al. 1999: 35, pl 1, fig 14, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

Arecipites sp. Srivastava & Bhattacharyya 2000: 375, pl 2, fig 9, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Kimin-Ziro Road Section, Lower Subansiri District, near Rilu village, West Siang District and Pasighat to Rengging Section, East Siang District, Arunachal Pradesh.


ARENGAPOLLENITES Kar, MONOPTYCHES.

Arengapollenites achinatus Kar. Kar & Bhattacharya 1992: 251, pl 2, fig 2, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Samant 1994: 49, EARLY EOCENE (Bhavnagar lignite, Kharaslia Clay Formation), South Cambay Basin, Gujarat (wrongly spelt as Arengapollenites echinatus); Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Samant & Phadtare 1997: 17-18, pl 3, figs 7-10, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Ramanujam et al. 1999: 35, pl 1, fig 22, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu; Samant 2000: 114, pl 2, fig 8, EARLY EOCENE (Kharaslia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Kumar et al. 2001: 245, EARLY-MIDDLE MIOCENE (Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat;

**Arengapollenites clavatus** Samant & Phadtare 1997: 17, pl 3, fig 6, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

**Arengapollenites ovatus** Kar & Bhattacharya 1992: 254, pl 2, figs 29-30, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Kumar 1996: 112, pl 1, fig 6, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Arengapollenites sp.** Ramanujam et al. 1999: 38, pl 1, figs 18-19, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

**ASSAMIALETES Singh** = **RETIALETES** Sah & Dutta (non Staplin 1960), **SPHAEROZONISULCATES.**

**Assamialesets crassimurus** (Sah & Dutta) Singh & Tripathi. Kumar & Takahashi 1991: 538-539, pl 8, fig 3, EARLY MIOCENE (Lower Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 24-25, 79, pl 16, figs 2, 4, 15, pl 43, fig 2, MIDDLE OLIGOCENE and LATE MIOCENE (Jenam and Bokabil formations), Silchar-Haflong Road Section, Assam.

**Schizosporis crassimurus** Sah & Dutta 1966: 78, pl 1, figs 18-19, PALAEOCENE (Cherra Formation), Shillong Plateau, Meghalaya.


**Assamialesets minutus** Kumar & Takahashi 1991: 539-540, pl 8, figs 5, 9, text-fig 4, EARLY MIOCENE (Lower Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 49, pl 24, figs 5-6, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

cf. **Assamialesets minutus** Kumar & Takahashi. Kumar 1994: 24, pl 7, fig 4, pl 16, figs 7, 33, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

**Assamialesets spp.** Kumar 1994: 50, pl 26, figs 10, 15, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

?**Assamialesets sp.** Kumar 1994: 15, pl 3, fig 10, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

?**Assamialesets sp.** Kumar 1994: 57, pl 31, fig 11, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

cf. **Assamialesets sp.** Kumar 1994: 97, LATE MIOCENE-PLIOCENE (Dupitila Formation), Silchar-Haflong Road Section, Assam.

**Assamialesets sp.** Tripathi 1995: 47, pl 1, figs 18-19, PALAEOCENE-EOCENE, Well Mk-327 near Kapurdi, Barmer District, Rajasthan.

**ASSAMIAPOLLENITES Singh, TUBERINI.**

**Assamiapollenites ghoshii** Singh & Saxena. Singh & Tripathi 1990: 326, pl 1, fig 10, MIOCENE (Siwalik sediments), Arunachal Pradesh; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Saxena 2000: 163, pl 1, fig 9, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra.

**Assamiapollenites sp.** Saxena & Misra 1990: 264, pl 3, fig 5, NEOGENE (Ratnagiri Beds), Amberiwiad Section, Sindhudurg District, Maharashtra.

**Assamiapollenites sp.** Rao & Rajendran 1996: 68, 70, pl 1, figs 16-17, MIOCENE (Quilon Forma-
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Assamia pollenites sp. Kumar et al. 2004: 158, pl 1, fig 5, NEOGENE and PLEISTOCENE, Site 218, Deep Sea Drilling Project Leg 22, Bengal Fan, Indian Ocean.

ASSAMIASPORITES Mehrotra & Sah, MURORNA.

Assamiasporites bellus (Sah & Kar) Mehrotra & Sah. Samant & Phadtar e 1997: 7, pl 1, fig 1, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

Assamiasporites tertiarus Mehrotra & Sah. Saxena & Misra 1990: 264, pl 3, fig 4, NEOGENE (Ratnagiri Beds), Amberiwiadi Section, Sindhudurg District, Maharashtra.

AURANGAPOLLENITES Srivastava, PODOCARPOIDITI.

Aurangapollenites brevizonatus (Tiwari) Bharadwaj & Dwivedi. Mandal et al. 2003: 100, 102, pl 3, fig 7, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

AZOLLA Lamarck in Lamarck & Poiret, SALVINIACEAE.

Azolla aglochidia Kar. Kar 1990a: 176, pl 6, figs 99-100, MIOCENE (Surma and Tipam groups), Rokhia Borahole No. 1, Gojaila Borahole No. 1 and Baramura Borahole No. 2, Tripura; Kar 1990b: 236, 239, MIDDLE OLIGOCENE and EARLY MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam.

BACULATISPORITES Pflug & Thomson in Thomson & Pflug, APICULATI.


?Baculatispores sp. Kumar & Takahashi 1991: 582, pl 7, fig 9, EARLY MIOCENE (Lower Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 55, pl 25, fig 8, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked; described as Baculatispores).


BACULIMONOCOLPITES Mandal et al., MONOPTYCHES.

Baculimonocolpites andamanensis Mandal et al. 1994: 210, pl 1, figs 5-6, 12, EARLY EOCENE, Kadamtala, Baratang Island, Andaman and Nicobar Islands; Mandal et al. 1996: 80, pl 1, fig 12, MIDDLE-LATE EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal et al. 2003: 102, 104, pl 1, fig 3, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

BACUSPINULOPOLLENITES Singh & Misra, PTYCHOTRIPORINES.

Bacuspinnulopolles baculatus Singh & Misra 1991a: 60, pl 1, figs 1-4, 9-10, MIOCENE (Cuddalore Formation), Borahole No. NLE-27, Mine III area, Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 57, pl 2, fig 11, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Rao & Nair 1998: 53, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala.

BACUSPINULOPOLLENITES Singh & Misra 1991a: 61, pl 1, figs 5-8, 11-12, MIOCENE (Cuddalore Formation), Borahole No. NLE-27,
Mine III area, Neyveli Lignitefield, South Arcot District, Tamil Nadu.

**BACUSTEPHANOCOLPITES** González Guzmán, POLYPTYCHES.

* Bacustephanocolpites sp. Singh et al. 1992: 57, pl 2, fig 14, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**BACUTRIPORITES** Jan du Chene et al., TRIPORINES.


* Bacutriporites sp. Mandal et al. 2003: 102, pl 1, fig 14, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

**BAKSIPOLLIS** Ramanujam et al., PYCHOTRIPORINES.

* Baksipollis miocenicus (Ramanujam) Ramanujam et al. Ramanujam et al. 1991: 54, pl 1, fig 27, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 3, fig 3, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 22, fig 2U, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

**BARRINGTONIAPOLENNITES** Kar & Sharma, PYCHOTRIPORINES.

* Barringtoniapollenites reticulatus Kar & Sharma 2001: 130, 134, pl 4, figs 2, 11, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

* Barringtoniapollenites retipilatus Kar & Sharma 2001: 130, 134, pl 4, figs 4, 7, pl 8, fig 1, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

**BETULACEOPOLLENITES** Potonié ex Potonié, TRIPORINES.

* Betulaceopollenites betulaeaeformis (Biswas) Kumar 1994: 15, pl 5, fig 4, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

* Triporites betulaeaeformis Biswas 1962: 45, pl 10, fig 11, EARLY-MIDDLE EOCENE (Sylhet Limestone Formation), Therriaghat, Shillong Plateau, Meghalaya.

**BETULAEPOLLENITES** Potonié ex Potonié, TRIPORINES.

* Betulaepollenites betuloides (Pflug) Nagy. Kumar 1994: 57, 79, pl 33, fig 9, pl 44, fig 24, MIOCENE (Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam.

* Betulaepollenites microexcelsus (Potonié) Potonié. Kumar & Takahashi 1991: 540, pl 12, fig 11, pl 18, figs 13, 20, MIDDLE-LATE MIOCENE (Middle Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 57, 79, pl 33, fig 13, pl 44, figs 13-14, MIOCENE (Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam.

* Betulaepollenites sp. Kumar & Takahashi 1991: 540, pl 12, fig 12, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam.


* Betulaepollenites sp. Hait & Banerjee 1994: 117, pl 3, fig 60, EARLY and LATE MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl and around Champhai, Mizoram.
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**Betulaepollenites sp.** Kumar 1994: 68, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Bhatiapollis Dogra et al. TRIPORINES.**


**Bicingulispora Frederiksen et al., CINGULATI.**

Bicingulispora sp. Chandra & Kumar 1998: 64, pl 1, fig 5, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean (Reworked).

**Biretisporites Delcourt & Sprumont, LAEVIGATI.**

Biretisporites bellus Sah & Kar. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh & Kar 2002: 215, pl 1, figs 6-7, PALAEOCENE (Deccan Intertrappean Beds), 3 km northeast of Papro village, Laitipur District, Uttar Pradesh; Singh & Kar 2003: 219, pl 1, fig 7, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Laitipur District, Uttar Pradesh.

Biretisporites convexus Sah & Kar. Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Saxena & Rao 1996: 46, pl 1, fig 3, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Singh & Kar 2003: 219, pl 1, figs 6, 8, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

**Biretisporites meghalayaensis Rao & Singh.**

Kumar 1994: 100, PLIO-PLEISTOCENE (Dupitila Formation), Silchar-Haflong Road Section, Assam; Singh & Sarkar 1994: 50, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Rao 1995a: 327, pl 1, fig 9, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Biretisporites minimus Kumar 1994: 19-20, 94, pl 2, fig 3, pl 3, figs 5-6, pl 46, fig 4, EARLY OLIGOCENE and LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean (Reworked).

**Biretisporites cf. minimus** Kumar 1994: 84, pl 39, figs 10, 13, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Biretisporites oligocenicus Rao & Singh. Kumar 1994: 35, pl 10, fig 2, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Rao 2000: 295, pl 2, fig 1, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

**Biretisporites singularis** Saluja et al. Saluja et al. 1991: 65, pl 1, fig 4, NEogene, Adamtila Well-A, Cachar District, Assam.

**Biretisporites sp. A.** Kumar & Takahashi 1991: 583, pl 9, fig 8, pl 10, fig 7, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 62, pl 29, figs 10, 14, pl 30, fig 14, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.
Biretisporites sp. B. Kumar & Takahashi 1991: 583, pl 16, fig 10, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Biretisporites sp. B. Kumar 1994: 62, pl 29, fig 13, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Biretisporites spp. Kumar 1994: 52, 94, pl 25, fig 2, pl 46, fig 4, MIOCENE-PLIOCENE (Bhuban and Tipam formations), Silchar-Haflong Road Section, Assam.


Bisaccate pollen. Kumar 1994: 22, 41, pl 3, fig 14, pl 21, fig 10, EARLY-MIDDLE OLIGOCENE (Laisong and Jenam formations), Silchar-Haflong Road Section, Assam (Reworked).

BISWASIASPORA Kar & Saxena, INCERTAE-SEDIS.

Biswasiaspora pseudoreticulata Kar & Saxena. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.


BITHNOKIAPOLLIS, Kar & Sharma, TRIPYCHES.

Bithnokiapollis striatus Kar & Sharma 2001: 129, 133, pl 3, figs 2, 6, 13, pl 4, fig 8, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

Bithnokiapollis retipilatus Kar & Sharma 2001: 129, 133, pl 3, figs 2, 6, 13, pl 4, fig 8, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.


BOMBACACIDITES Couper, PROLATI.

Bombacacidites africanus Sah. Saxena 2000c: 163, pl 1, figs 10-11, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.


Bombacacidites bombaxoides Couper. Hait & Banerjee 1994: 117, pl 2, fig 28, EARLY MIOCENE, near Swangpuiawlawn village about 20 km northeast of Aizawl, Mizoram; Mandaokar 2002a: 116, lATE MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.


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Borehole No. MI 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 181, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Samant 2000: 114, pl 2, fig 6, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Kar & Sharma 2001: 129, pl 4, figs 2, 11, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.

Bombacacidites sp. Ramanujam et al. 1991: 3, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

Bombacacidites sp. Ramanujam et al. 1992: 22, fig 2N, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

Bombacacidites sp. Singh et al. 1992: 57, pl 2, fig 6, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.


Bombacacidites sp. Tripathi 1997: 170, EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan.

Bombacacidites sp. Anderson, TRIPTYCHES.

Bombacacidites nacimientoensis Anderson. Mitra et al. 2000: 126, pl 1, fig 22, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya (wrongly spelt as Bombacicipites nacimiento)

BRACHYSACCUS Maedler, QUASILAEVIGATI.

Brachysaccus sp. Mandal et al. 2003: 102, pl 3, fig 12, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

BREVICOLPORITES Anderson, PTYCHOTRIPORINES.


BREVITRILETES Bharadwaj & Srivastava, VARITRILETI.


CAHENIASACCITES Bose & Kar, DIVARISACCITI.

Caheniasaccites indicus Srivastava. Mandal et al. 2003: 102, pl 2, fig 1, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Caheniasaccites ovatus Bose & Kar. Singh et al. 1991: 41, pl 1, fig 3, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

CALAMOSPORA Schopf et al., LAEVIGATI.

Calamospora aplata Bharadwaj & Saluja. Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

Calamospora microrugosa (Ibrahim) Schopf et al. Mehrotra et al. 2001: 241, pl 1, fig 2, EARLY EOCENE (Panna Formation), Bombay Offshore, Arabian Sea (Reworked).

Calamospora cf. perrugosa (Loose) Schopf et al. Mehrotra et al. 2001: 241, pl 1, fig 1, EARLY EOCENE (Panna Formation), Bombay Offshore, Arabian Sea (Reworked).

cf. Calamospora sp. Kumar 1994: 22, pl 3, fig 13, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam (Reworked).


Callialasporites dampieri (Balme) Dev. Kumar et al. 2001: 250, fig 6.13, OLIGOCENE (Barail Group), Tinali W-7, Upper Assam (Reworked); Gupta et al. 2003: 212, PALAEOCENE-EARLY EOCENE (Subathu Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Callialasporites lucidus (Pocock) Maheshwari. Mandal et al. 2003: 102, pl 2, fig 7, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Callialasporites monosporus Dev. Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

Callialasporites segmentatus (Balme) Dev. Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked); Trivedi 1991: 67, pl 1, fig 6, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarapur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked); Sarkar & Prasad 2000b: 147, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Ghaggar river near Khurak village, Morni Hills, Haryana (Reworked).

Callialasporites trilobatus (Balme) Dev. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokha Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Trivedi 1991: 67, pl 1, figs 10-11, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarapur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked); Mandal et al. 1996: 80, LATE CRETACEOUS, mud volcano in Baratang Island, Andaman and Nicobar Islands; Saxena & Rao 1996: 48, pal 3, fig 14, EARLY MIOCENE (Boldamgiri Formation), Adugri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya (Reworked); Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram (Reworked); Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya (Reworked); Sarkar & Prasad 2000b: 147, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Ghaggar river near Khurak village, Morni Hills, Haryana (Reworked) Srivastava & Bhattacharyya 2000: 375, pl 3, fig 5, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked); Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland (Reworked).

Callialasporites sp. Kar & Bhattacharya 1992: 257, pl 1, fig 29, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat (Reworked).

Callialasporites spp. Kumar 1994: 22, pl 3, figs 11, 15, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam (Reworked).

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part of Jwalamukhi Structure, Himachal Pradesh (Reworked).

Callialasporites sp. Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Callialasporites sp. Mandal et al. 2003: 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

CALLUMISPORA Bharadwaj & Srivastava, LAEVIGATI.

Callumispora gretensis (Balme & Hennelly) Bharadwaj & Srivastava. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

Callumispora sp. Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

CANNANOROPOLLIS Potonié & Sah, APERTACORPITI.


Cannanoropollis medius Potonié & Sah. Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

Cannanoropollis obscurus (Lele) Bose & Maheshwari. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 1991: 27, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked).

Cannanoropollis trilobatus (Bose & Kar) Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked). Invalid combination.

Cannanoropollis sp. Singh et al. 1991: 41, pl 2, fig 1, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

CAPRIFOLIIPITES Wodehouse, PROLATI.

Caprifoliipites descretus Venkatachala & Rawat. Kumar 1994: 25, pl 18, fig 16, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.


Caprifoliipites sp. Ramanujam et al. 1992: 22, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

CARPINIPITES Srivastava, TRIPORINES.

Carpinipites spp. Kumar 1994: 25, 43, 57, 68, pl 7, fig 5, pl 18, fig 12, pl 19, fig 2, pl 23, fig 13, pl 33, fig 14, MIDDLE OLIGOCENE-MIDDLE MIOCENE (Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam.

CARYAPOLLENITES Raatz ex Potonié, TRIPORINES.

Caryapollenites sp. Hait & Banerjee 1994: 118, pl 3, fig 59, LATE MIOCENE, around Champhai, Mizoram.

CARYOPHYLLIDITES Couper, PERIPORITI.

 Caryophyllidites warkalliensis Ramanujam. Ramanujam et al. 1991: 3, pl 3, fig 19, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 22, fig 3Y,
EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

**CAUVERIPOLLIS** Venkatachala & Rawat, TRIPORINES.


**CEDRIPITES** Wodehouse, CEDROSACCITI.

Cedripites miocenicus Krutzsch. Sarkar et al. 1994: 201, pl 2, fig 10, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

Cedripites nudis Kar & Sah. Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 2002b: 21, pl 2, fig 10, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.


Cedripites sp. Singh & Sarkar 1994: 50, pl 1, fig 13, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.


**CERATOSPORITES** Cookson & Dettman, APICULATI.


CEREBROPOLLENITES (Nilsson) Singh & Kumar, MONOSACCITI.

Cerebropollenites sp. Mandal et al. 2003: 102, pl 3, fig 8, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**CHEILANTHOIDSPORA** Sah & Kar, MURORNATI.

Cheilanthoidspora enigmata Sah & Kar. Kumar et al. 2001: 244, OLIGOCENE and MIOCENE of Baratang Formation, Baratang Island, Andaman and Nicobar Islands.


Cheilanthoidspora monoleta Sah & Kar. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Rao 1990: 248, pl 1, figs 11-12, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Kumaran
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et al. 1995: 1024, fig 4e, MIOCENE (Warkali Formation), Bharathi and Kundla Clay Mines, Kerala; Rao 1995a: 327, pl 1, fig 4, EOCENE-EARLY MIOCENE, Kalarakod and Nirkunnam Boreholes, Alleppey District, Kerala; Rao 1996: 157, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Saxena & Rao 1996: 46, pl 3, fig 3, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Mandaokar 1999: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.


CHIRANTHODENDRONPOLLENITES Kar & Sharma, PTYCHOTRIPORINES.
Chiranthodendronpollenites bikanerensis Kar & Sharma 2001: 129, 138, pl 3, figs 5, 10, 14, pl 4, fig 5, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

CHOANOPOLLENITES Stover in Stover et al., TRIPORINES.

Choanopollenites consanguineus Tschudy. Gupta et al. 2003: 591, fig 3e, PALAEOGENE, Ganga Basin (wrongly apelt as Choanopollenites consanguieus).

CHORDASPORITES Klaus. STRIATITI.

Chordasporites sp. Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

CICATRICOSISPORITES Potonié & Gelletich, MUORNATI.


Cicatricosisporites crassiterminatus Hedlund. Kar 1990a: 176, pl 3, fig 56, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.


Cicatricosisporites macrocostatus (Baksi) Sah & Dutta. Banerjee & Nandi 1994: 216, pl 1, fig 6, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram.


Cicatricosisporites pachyexinus (Rao & Singh) Kumar & Takahashi 1991: 584-585, pl 7, fig 5, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam.

Cicatricosisporites susannae (van der Hammen) Kumar & Takahashi 1991: 58-585, pl 4, fig 4, MIDDLE OLIGOCENE and MIOCENE (Jenam, Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Salujha et al. 1991: 65, pl 1, fig 14, NEOGENE, Adamtila Well-A, Cachar District, Assam.

Cicatricosisporites susannae (van der Hammen) Kumar & Takahashi 1991: 584-585, pl 9, fig 4, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam.

Cicatricosisporites pudens Salujha et al. Kumar & Takahashi 1991: 584, pl 4, fig 4, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Turadalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Cicatricosisporites susannae (van der Hammen) Kar 1990a: 175, pl 3, figs 57-59, pl 9, figs 137-138, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 237, 239, EOCENE-EARLY MIOCENE (Disang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Rao 1990: 246, pl 1, fig 28, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Saxena & Bhattacharyya 1990: 110, pl 1, fig 1, OLIGOCENE-EARLY MIOCENE (Dharmasala Group), Churan Khad and Manji Khad sections near Dharmasala, Kangra Dis-
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district, Himachal Pradesh; Saxena & Misra 1990: 264, pl.3, fig.15, NEOGENE (Ratnagiri Beds), Amberiwiadi Section, Sindhudurg District, Maharashtra; Singh & Tripathi 1990: 329, MIOCENE (Siwalik sediments), Arunachal Pradesh; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Ramanujam et al. 1991: 53, pl.1, fig.5, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Handique et al. 1992: 219, MIOCENE (Surma and Tipam groups), Moran Oilfield, Upper Assam; Mandaokar 1993: 139, pl.1, fig.35, pl.2, fig.15, 26, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Rao et al. 1993: 81, pl.1, figs.8-9, EARLY MIOCENE, Thakkashi Borewell, Alleppey District, Kerala; Kar et al. 1994: 185, pl.1, fig.25, pl.2, fig.35, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 40, 64, 95, pl.8, figs.5-6, 10, pl.25, fig.7, pl.29, fig.12, pl.30, figs.5, 7, pl.31, fig.13, fig.45, pl.3, MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Jenam, Bhuban and Tipam formations), Silchar-Haflong Road Section, Assam; Sarkar et al. 1994: 201, pl.3, fig.5, EARLY MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Rao et al. 1995: 372, figs.10-11, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala; Rao 1995a: 327, pl.1, fig.10, EOcene-EARLY MIOCENE, Kalarakod and Nirkunnam Boreholes, Alleppey District, Kerala; Mandal et al. 1996: 81, pl.1, fig.5, OLIGOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao 1996: 157, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Saxena & Rao 1996: 46, pl.1, figs.18-19, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandal 1997: 99, pl.1, fig.1, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Chandra & Kumar 1998: 64, pl.1, fig.4, LATE TERTIARY, DSIP Leg 22, Site 218, Bengal Fan, Indian Ocean; Rao & Nair 1998: 52, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 180, pl.1, figs.5, 15, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl.2, fig.4, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 295, pl.2, fig.18, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Sarkar & Prasad 2000a: 171, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), Koshalia Nala Section near Koti, Shimla Hills, Solan District, Himachal Pradesh; Srivastava & Bhattacharyya 2000: 375, pl.1, fig.9, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Session Road, West Kameng District, Arunachal Pradesh; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, pl.2, figs.7-8, 14, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Rao & Patnaik 2001: 269, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keilig Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik),
Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh (Reworked); Mandal et al. 2003: 102, pl 1, fig 5, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram; Chakraborty 2004: 116, pl 1, fig 9, LATE PLEISTOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam; Mandal & Vijaya 2004: 495, fig 5A, LATE OLIGOCENE-EARLY MIOCENE, Bordehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal; Rao 2004: 125, pl 1, fig 9, MIOCENE (Sindhudurg Formation), Kalviwadi, Sindhudurg District, Maharashtra.

**Cicatricosisporites sp.** Kumar 1994: 20, pl 3, fig 4, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

cf. **Cicatricosisporites sp.** Kumar 1994: 36, pl 8, fig 3, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

**Cicatricosisporites sp.** Mandal et al. 1994: 210, pl 1, fig 4, EARLY EOCENE, Kadamtala, Baratang Island, Andaman and Nicobar Islands.


**Cicatricosisporites sp.** Mehrotra et al. 2000: 153, LATE EOCENE (Kopili Formation), Upper Assam.

**Cicatricosisporites sp.** Sarkar & Prasad 2000b: 147, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Ghaggar river near Kharak village, Morni Hills, Haryana.

**Cicatricosisporites sp.** Gupta et al. 2003: 212, PALAEOCENE-EOCENE, Ganga Basin (Reworked).

**Cicatricosisporites sp.** Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**Cicatricosisporites sp.** Pflug & Thomson in Thomson & Pflug, MONOLETES.

**Cicatricosisporites spp.** Kumar 1994: 84, 94, pl 40, fig 6, LATE MIOCENE-PLIOCENE (Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam.

**Cingulatisporites** Thomson in Thomson & Pflug, CINGULATI.

**Cingulatisporites sp.** Kar 1990a: 182, pl 1, fig 17, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**Cingulatisporites sp. A-B.** Kar 1990a: 179, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**Cingulatisporites sp.** Ramanujam et al. 1991: 2, pl 1, fig 3, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

**Cingulatisporites sp.** Kumaran et al. 1995: 1024, fig 4f, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines, Kerala.

**Cingulatisporites sp.** Singh & Kar 2003: 219, pl 2, fig 2, PALAEOCENE (Deccan Intrarappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

**Cingulatisporites sp.** Pflug & Thomson in Thomson & Pflug, CINGULATI.

**Cingulatisporites sp.** Kumar & Takahashi 1991: 585, pl 3, fig 1, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 36, 84, pl 8, fig 2, MIDDLE OLIGOCENE and LATE MIOCENE (Jenam and Bokabil formations), Silchar-Haflong Road Section, Assam.

**Cirratriradites** Wilson & Coe, ZONATI.

**Cirratriradites sp.** Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.
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**CLASSOPOLLIS** Pflug, *PTYCHOTRIPORINES.*

**Classopollis classoides** Pflug. Kumar 1994: 77, pl 36, fig 10, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Classopollis indicus** Maheshwari. Gupta et al. 2003: 212, PALAEOCENE-EOCENE, Ganga Basin (Reworked).

**Classopollis sp.** Kumar 1994: 77, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**CLAVADIPOROPOLLENITES** Ambwani & Singh, *DIPORINES.*

**Clavadiporopollenites raneriensis** Ambwani & Singh 1996: 140, pl 1, figs 1-13, PALAEOCENE, Bore core no. RGBH 33/14 (Depth 90.2 m), Raneri, Bikaner District, Rajasthan; Tripathi et al. 2003: 91, LATE PALAEOCENE (Akli Formation), Barmer Basin, Rajasthan.

**CLAVAINAPERTURITES** van der Hammen & Wijmstra, *SUBPILOMAPITI.*

**Clavainaperturites clavatus** van der Hammen & Wijmstra. Rao 1990: 246, pl 1, fig 9, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Saxena & Rao 1996: 46, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.

**CLAVAMONOCOLPITITES** González Guzmán, *MONOPTYCHES.*

**Clavamonocolpites indicus** Singh 1990: 225, pl 1, figs 4-5, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

**CLAVAPALMAEDITES** Rao & Ramanujam, *MONOPTYCHES.*

Classopollis hammenii Rao & Ramanujam. Ramanujam et al. 1991: 3, pl 2, fig 6, NEogene, Mynagapalli Borewell, Quilon District, Kerala; Samant & Phadtare 1997: 18, pl 3, figs 11-12, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Ramanujam et al. 1999: 35, pl 1, fig 8, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu; Samant 2000: 114, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

**Clavapalmaedites hammenii** Rao & Ramanujam. Ramanujam et al. 1991: 3, pl 2, fig 6, NEogene, Mynagapalli Borewell, Quilon District, Kerala; Samant & Phadtare 1997: 18, pl 3, figs 11-12, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Ramanujam et al. 1999: 35, pl 1, fig 8, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu; Samant 2000: 114, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

**Clavapalmaedites longisulcatus** Samant & Phadtare 1997: 18, pl 3, fig 13, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

**Clavapalmaedites sp.** Hait & Banerjee 1994: 115, pl 1, fig 9, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram.

**CLAVAPERIPORITES** Ramanujam, *PERIPORITI.*

**Clavaperiporites clavatus** Navale & Misra. Singh et al. 1992: 57, pl 2, fig 19, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Kumar 1996: 112, pl 1, figs 8-9, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Clavaperiporites heteroclavatus** Samant & Phadtare 1997: 20, pl 3, figs 14-19, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

**Clavaperiporites homoclavatus** Samant & Phadtare 1997: 19, pl 4, figs 1-3, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.
**Clavaperiporites jacobii** Ramanujam, Saxena & Misra 1990: 264, NEOGENE (Ratnagiri Beds), Amberiwi Section, Sindhudurg District, Maharashtra; Ramanujam et al. 1991: 54, pl 1, fig 30, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1992: 22, fig 3V, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 82, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Rao 1995a: 327, pl 4, fig 9, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Kumar 1996: 112, pl 1, fig 4, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Rao 1996: 157, pl 1, fig 20, EARLY MIOCENE, Turuvur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendran 1996: 74, 75, pl 1, fig R, Upper Siwalik, Haripur Khol, Sirmaur District, Himachal Pradesh.

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**Clavaperiporites ramanujamii** Samant & Phadtare 1997: 20, pl 4, figs 4-8, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

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**Clavaperiporites sp.** Saxena & Misra 1990: 264, pl 2, fig 6, NEOGENE (Ratnagiri Beds), Amberiwi Section, Sindhudurg District, Maharashtra.

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**Clavatricolporites** Leidelmeyer, PTYCHOTRIPORINES.

**Clavatricolporites sp.** Misra & Kapoor 1994: 159, MIDDLE EOCENE (Lower Dharmshala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh.

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**Clavatricolporites** De Silva Pares Regali et al., APICULATI.

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**Clavatricolporites disperitis** in Mehrotra et al. 2000: 153, MIDDLE-LATE EOCENE (Sylhet and Kopili formations), Upper Assam. Nomen nudum.

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**Collospermumpollis** Tripathi & Singh, MONOPTYCHES.

**Collospermumpollis laevigatus** Tripathi & Singh. Singh & Tripathi 1990: 330, pl 1, fig 30, MIOCENE (Siwalik sediments), Arunachal Pradesh.

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**Compositae (pollen).** Phadtare et al. 1994: 74, 75, pl 1, fig R, Upper Siwalik, Haripur Khol, Sirmaur District, Himachal Pradesh.

**Compositopollenites** Potonie ex Potonie, PTYCHOTRIPORINES.

**Compositopollenites africanus** Sah, Hait & Banerjee 1994: 117, pl 2, figs 33-34, LATE MIOCENE, around Champhai, Mizoram; Rao 1995a: 327, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram.

**Compositopollenites alleppeyensis** Rao 1995a: 328, 331, pl 3, figs 1-3, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Kumar et al. 2001: 245, LATE MIOCENE and PLEISTOCENE (Girujan Clay and Dhekiajuli formations), Tinali Well-7, Upper Assam.

**Compositopollenites argutus** Sah. Ramanujam et al. 1991: 54, pl 1, figs 19, 26, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 3, figs 1-2, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Mandaokar 1996b: 41, LATE Oligocene (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Gupta et al. 2003: 211, Palaeocene-Eocene, Ganga Basin.
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**Compositoipollenites conicus** Sah. Kar 1990a: 194, pl 5, fig 80, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar et al. 1994: 186, pl 2, figs 15, 28, TERTIARY, subsurface sediments in Upper Assam; Singh & Sarkar 1994: 50, pl 1, fig 3, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilijeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Chandra & Kumar 1998: 66, pl 2, figs 10-11, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean; Mandaokar 2000b: 181, pl 2, figs 39, 51, LATE TERTIARY (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, EARLY MIOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Saxena & Sarkar 2000: 257, pl 2, figs 10-11, MIDDLE EOCENE (Siju Formation), Simsang River Section near Siju, South Garo Hills District, Meghalaya.


**Compositoipollenites sentis** Sah. Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.

**Compositoipollenites serratus** Sah. Sarkar et al. 1994: 201, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.

**Compositoipollenites tricolporatus** Kar. Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 2000c: 38, pl 1, fig 2, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002b: 21, pl 2, figs 1, 4, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Keifang Formation), Champhai area, Eastern Mizo Hills, Mizoram.

**Compositoipollenites sp.** Kar et al. 1994: 186, pl 1, fig 8, TERTIARY, subsurface sediments in Upper Assam.

**Compositoipollenites spp.** Kumar 1994: 25, 79, pl 17, fig 9, MIDDLE MIOCENE-EARLY PLIOCENE (Jenam and Bokabil formations), Silchar-Haflong Road Section, Assam.

?**Compositoipollenites sp.** Kumar 1994: 57, pl 33, fig 16, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.


**Compositoipollenites sp.** Kumar et al. 2001: 245, LATE MIOCENE (Girujan Clay Formation), Tinali Well-7, Upper Assam.

**CONBAULATISPORITES** Klaus, APICULATI.

**Conbaculatisporites sp. A.** Kumar & Takahashi 1991: 586, pl 14, fig 3, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 73, pl 35, fig 9, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.
Conbaculatisporites sp. B. Kumar & Takahashi 1991: 586, pl 14, fig 5, EARLY LATE MIocene (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 73, pl 35, fig 7, EARLY-MIDDLE MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam.

CONEOPOLLIS Venkatachala & Rawat, TRIPORINES.

Coneopollis decorus Venkatachala & Rawat. Kumar 1994: 97, pl 50, fig 4, LATE MIocene-Pliocene (Dupitila Formation), Silchar-Haflong Road Section, Assam.

CONIFERIPITES Baksi, PODOCARPOIDITI.

Coniferripes abiesmilis Baksi. Misra et al. 1996: 95, EARLY MIocene (Baghmara Formation), Tura-Dalu Road Section along Bugi River and in the vicinity of Baghmara, Garo Hills, Meghalaya.

CONITRICOLPORITES Kar, PTYCHOTRI-PORINES.

Conitricolporites triangulus Kar 1990a: 194, pl 5, figs 70-72, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 2000b: 183, pl 8, figs 8, 10, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

CONTIGNISPORITES Dettmann, CINGULATI.


Contignisporites glebulentus Dettmann. Kar & Sharma 2001: 128, pl 1, fig 4, 6, LATE PALAEOCENE-EARLY EOcene (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

Contignisporites sp. Trivedi 1991: 67, LATE EOcene (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

Contignisporites sp. Mandal et al. 2003: 102, pl 2, fig 10, EOcene (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

CONTOURIPOLLIS in Misra & Kapoor. Nomen nudum.


CONVERRUCOSISPORITES Potonié & Kremp, APICULATI.


COOKSONITES Pocock, HILATES.


COPTOSPORA Dettmann, HILATES.

Coptospora cauveriana Venkatachala. Kumar 1994: 77, EARLY-MIDDLE MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam.

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Coptospora mesozoica Singh & Tewari 1978 (non Kumar 1973): 489, pl 2, figs 33, 38, LATE CRETACEOUS (Gumaghat and Mahadek Formations), Meghalaya.

Coptospora mesozoica Singh & Tewari (non Kumar 1973) = Coptospora meghalayaensis Saxena.

CORISACCITES Venkatachala & Kar, STRIATITI.

Corisaccites alutas Venkatachala & Kar. Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked); Mandal et al. 2003: 100, pl 3, fig 11, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Corisaccites vanus Venkatachala & Kar. Kar 1990a: 181, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

CORRUGATISPORITES Thomson & Pflug, MUORNATI.

Corrugatisporites formosus Dutta & Sah. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

Corrugatisporites sp. Kumar 1994: 20, pl 2, fig 9, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

Corrugatisporites sp. Misra et al. 1996: 95, OLIGOCENE (Simsang Formation), Tura-Dalu Road near Kherapara, Garo Hills, Meghalaya.

CORRUSPORIS Krutzsch, MUORNATI.

Corrusporis indicus Kumar & Takahashi 1991: 586-587, pl 18, fig 10, text-fig 18, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 79, 98, pl 49, figs 2, 5, LATE MIOCENE-PLIOCENE (Bokabil and Dupitila formations), Silchar-Haflong Road Section, Assam.

CORSINIPOLLENITES Nakoman, TRIPORINES.

Corisinipollenites jussiaeensis Jan du Chene et al. Mandal & Kumar 2000: 199-201, pl 2, figs 11-12, OLIGOCENE (Barail Group), Tinali Well-7, Tinali Oilfield, Upper Assam; Kumar et al. 2001: 244, fig 5.9, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.

COUPERIPOLLIS Venkatachala & Kar, RETECTINES.

Couperipollis achinus Sah & Kar = Spinomonocolpites achinus (Sah & Kar) Singh & Misra.

Couperipollis brevispinosus (Biswas) Venkatachala & Kar = Spinomonosulcites brevispinosus (Biswas) Kumar.

Couperipollis cymbatus Venkatachala & Rawat = Neocouperipollis cymbatus (Venkatachala & Rawat) Saxena & Khare.


Couperipollis kutchensis Venkatachala & Kar = Acanthotrichopites kutchensis (Venkatachala & Kar) Singh & Misra.

Couperipollis magnus (Dutta & Sah) Kar & Kumar = Spinomonosulcites magnus (Dutta & Sah) Singh & Misra.

Couperipollis rarispinosus (Sah & Dutta) Venkatachala & Kar = Neocouperipollis rarispinosus (Sah & Dutta) Kar & Kumar.
**Couperipollis robustus** Saxena = *Neocouperipollis robustus* (Saxena) Saxena & Khare.

**Couperipollis spinorobustus** Kar & Kumar = *Spinonomosulcites spinorobustus* (Kar & Kumar) Singh & Misra.

**Couperipollis sp.** Singh & Tripathi 1990: 329, pl 1, fig 7, MIOCENE (Siwalik sediments), Arunachal Pradesh.

**Couperipollis spp.** Shanmukhappa & Kashol 1993: 195, 200, 202, EARLY-LATE EOCENE (Cambay Shale and Ankleshwar formations), Gandhar area, Broach Depression, Cambay Basin, Gujarat.

**Couperipollis spp.** Punudeer & Mehrotra 2000: 141, THANETIAN-PRESPIAN (Basal Sandstone), Upper Assam Shelf.

**CRASSORETITRILETES** Germeraad et al., MUORNASI.

**Crassoretitrites vanaadshoovenii** Germeraad et al. Ramanujam et al. 1989: 28, pl 1, figs 1-4, MIOCENE, subsurface sediments of eastern coast of southern India; Kar 1990a: 175, pl 3, figs 49-51, pl 9, fig 140, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Rao 1990: 246, pl 1, fig 19, pl 3, fig 26, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Ramanujam et al. 1991: 53, pl 1, fig 6, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 2-3, pl 1, fig 9, NEOCENE, Mynagapalli Borewell, Quilon District, Kerala; Saxena 1991: 369, fig 13, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 81, pl 1, figs 1-2, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Kar et al. 1994: 185, pl 1, fig 22, pl 2, fig 23, TERTIARY, subsurface sediments in Upper Assam; Rao et al. 1995: 372, fig 9, EARLY MIOCENE, Borewell at Kulasekkaramangalam, Kottayam District, Kerala; Rao 1995a: 327, pl 1, fig 7, EOCENE-EARLY MIOCENE, Kalarakod and Nirkunnam Boreholes, Alleppey District, Kerala; Mandal et al. 1996: 81, OLIGOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao 1996: 157, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendran 1996: 66, MIOCENE, Cannanore District, Kerala; Rao & Nair 1998: 52, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala; Aswal & Singh 2000: 125, PLEOCENE, Saripalli Well-A, Krishna-Godavari Basin, Andhra Pradesh; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation),Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 180, pl 7, fig 19, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 17, pl 2, fig 16, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Srivastava & Bhattacharyya 2000: 375, pl 2, fig 2, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh; Kumar et al. 2001: 244, 245, OLIGOCENE, EARLY-MIDDLE MIOCENE and MIO-PLIOCENE (Barail Group, Surma and Tipam groups excluding Gurijan Clay Formation and Namsang Formation), Tinali Well-7, Upper Assam; Mandaokar 2002a: 116, EARLY MIOCENE (Dolute Formation), 2 km from Dule village on Dule-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandal & Vijaya 2004: 497, LATE OLIGOCENE-EARLY MIOCENE, Borehole PGD-1A, Raniganj Coalfield, Darnodar Basin, West Bengal.

**Crassoretitrites sp.** Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

Crassoretriletes sp. Srivastava & Bhattacharyya 2000: 375, pl 1, fig 4, EARLY TERTIARY, Arunachal Pradesh.

Crescentipollenites Bharadwaj et al., STRIATITI.

Crescentipollenites fusus (Bharadwaj) Bharadwaj et al. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandal et al. 2003: 102, pl 3, fig 9, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).


CRICOTRIPORITES Leidelmeyer, TRIPORINES.

Cricotriporites camerouensis Salard-Cheboldaeff. Ramanujam et al. 1991: 54, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 3, fig 4, NEogene, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 22, figs 3J, M, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

Cricotriporites sp. Ramanujam et al. 1991: 10, pl 3, fig 5, NEogene, Mynagapalli Borewell, Quilon District, Kerala.


CROTONIPOLLIS Baksi et al. (non De Lima 1976) = INCROTONIPOLLIS Jansonius & Hills, ALETES.

Crotonipollis mannargudensis Acharya 2000: 26, pl 1, figs 3, 5, 9, EARLY EOCENE, Borhole No. MII 128 (depth 124.1-124.2 m), Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu.

CROTONISULCITES Rao & Ramanujam, MONOPTYCII.

Crotonisulcites sp. Rao & Rajendran 1996: 70, pl 1, fig 14, MIOCENE (Quilon Formation), Meenkunnu Phase I, Cannanore District, Kerala.

CROTONOIDAEPOLLENITES Rao & Ramanujam, SUBPILONAPITI.


CRUCIFEROIPOLLENITES Navale & Misra, TRIPTYCHES.

Cruciferipollenites elongatus Navale & Misra. Singh et al. 1992: 56, pl 1, fig 13, MIOCENE (Cuddalore Formation), Neyvelli Lignitefield, Tamil Nadu.

CRYPTOPOLYPORITES Venkatachala & Kar, PERIPORITI.

Cryptopolyporites cryptus Venkatachala & Kar. Samant 1994: 49, EARLY EOCENE (Bhavnagar lignite, Kharsalia Clay Formation), South Cambay Basin, Gujarat; Samant & Phadtare 1997: 21, pl 4, figs 9-10, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 2, fig 4, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, pl 1, fig 8, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Cryptopolyporites indicus Saxena & Khare 2004: 74, 87, pl 2, fig 23, LATE PALAEOCENE-MID-
R. K. Saxena and G. K. Trivedi

DLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Cryptopolyporites scrobiculatus Samant & Phadtare 1997: 21-22, pl 4, figs 11-12, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

Cryptopolyporites sp. Saxena & Khare 2004: 74, 87, pl 2, fig 14, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

CTENOLOPHONIDITES van Hoeken-Klinkenberg, PTYCHOPOLYPORINES.

Ctenolophonidites costatus (van Hoeken-Klinkenberg) van Hoeken-Klinkenberg, Rao 1990: 246, pl 2, figs 18-19, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Singh & Tripathi 1990: 330, pl 1, fig 32, MIOCENE (Siwalik sediments), Arunachal Pradesh; Ramanujam et al. 1991: 54, pl 1, figs 28, 33, EARLY MIOCENE, Pattankad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 2, figs 15-18, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Saxena 1991: 370, fig 1, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Ramanujam et al. 1992: 22, figs 2R, S, EARLY MIOCENE (Myyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 82, pl 1, fig 16, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Kumaran et al. 1995: 1024, fig 4b, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines, Kerala; Rao et al. 1995: 374, figs 18-19, EARLY MIOCENE, Borewell at Kulasekbaramangalam, Kottayam District, Kerala; Rao 1995a: 327, pl 4, figs 1-2, EOCENE-EARLY MIOCENE, Kalarakod and Nirkunnam Boreholes, Alleppey District, Kerala; Saxena 1995: 99, figs 8, 35, 38, MIOCENE (Myyanad Formation), Kundra Clay Mines, Quilon District, Kerala; Phadtare & Samant 1996: 673-674, pl 2, figs 8-12, pl 3, figs 1-6, EARLY EOCENE (Rajpardi lignite), Rajpardi, Bharuch District, Gujarat; Rao 1996: 157, pl 1, figs 11-12, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendra 1996: 66, pl 2, figs 17-18, MIOCENE, Cannanore District, Kerala; Samant & Phadtare 1997: 22, pl 4, fig 13, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Rao & Nair 1998: 53, pl 1, fig 15, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changelang District, Arunachal Pradesh; Samant 2000: 114, pl 2, fig 9, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, pl 1, fig 10, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.

Ctenolophonidites magnus Saxena & Khare 2004: 74, 84, pl 2, fig 4, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


Ctenolophonidites cf. stellatus Navale & Misra. Singh et al. 1992: 57, pl 2, fig 9, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.
Ctenolophonidites sp. Kar & Bhattacharya 1992: 258, pl 1, fig 32, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.


Ctenolophonidites sp. Mandal 1997: 105-106, pl 1, fig 11, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.


Cuddaloripollis Singh & Misra, PYCHOTRIPORINES.

Cuddaloripollis complexa Singh & Misra 1991a: 71, pl 2, figs 1-4, 6-7, 9-10, text-fig 4, MIOCENE (Cuddalore Formation), Borehole No. NLE-27, Mine III area, Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 57, pl 2, fig 17, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu.

Cuddaloripollis simplex Singh & Misra 1991a: 71-72, pl 2, figs 5, 8, 11-16, test-fig 5, MIOCENE (Cuddalore Formation), Borehole No. NLE-35, Mine III area, Neyveli Lignitefield, South Arcot District, Tamil Nadu.

CUNEATISPORITES Leschik, PODOCARPOIDITI.

Cuneatisporites exiguo Saluja. Mandal et al. 2003: 104, pl 1, fig 6, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).
Cupuliferoidaepollenites liblarensis (Thomson in Potonié et al.) Potonié. Banerjee & Nandi 1994: 219, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Kumar 1994: 16, 26, pl 5, figs 1, 6, pl 17, fig 19. EARLY-MIDDLE OLIGOCENE (Laisong and Jenam formations), Silchar-Haflong Road Section, Assam.

Cupuliferoidaepollenites quisqualis Potonié. Mitra et al. 2000: 126, pl 1, fig 23, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

Cupuliferoidaepollenites vulgaris (Takahashi) Takahashi. Kumar 1994: 16, 26, pl 4, figs 6, 12, 14, EARLY-MIDDLE OLIGOCENE (Laisong and Jenam formations), Silchar-Haflong Road Section, Assam.

Cupuliferoidaepollenites weylandii (Takahashi) Takahashi. Kumar & Takahashi 1991: 542, pl 18, fig 19, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 68, 80, pl 38, figs 17, 20, 24, pl 44, figs 12, 16, MIOCENE (Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam.

Cupuliferoidaepollenites spp. Kumar & Takahashi 1991: 542-543, pl 1, figs 15, 17, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

Cupuliferoidaepollenites ovatus Venkatachala & Kar. Kar & Bhattacharya 1992: 251, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Bardwan District, West Bengal; Mandal 1997: 99, pl 1, fig 19, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Mandaokar 2000b: 181, pl 2, fig 47, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 43, pl 1, fig 5, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002a: 116, LATE OLIGOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borphal Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhitmuipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizos, Mizoram.
Cupuliferoipollenites pusillus Potonié, Hirt & Banerjee 1994: 116, pl 2, fig 26, EARLY and LATE MIOCENE, near Suangpulawn village about 20 km northeast of Aizawl and around Champhai, Mizoram; Kar et al. 1994: 186, pl 2, fig 22, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002c: 79, EARLY MIOCENE (Disang, Jenam, Renji and Bokabil formations), Silchar-Haflong Road Section, Assam.

Cupuliferoipollenites spp. Kumar 1994: 12, 25-26, 43, 80, pl 19, fig 3, pl 23, fig 3, pl 44, fig 11, LATE CRETACEOUS-EOCENE, MIDDLE-LATE OLIGOCENE and LATE MIOCENE (Disang, Jenam, Renji and Bokabil formations), Silchar-Haflong Road Section, Assam.


CYATHIDITES Couper, LAEVIGATI.

Cyathidites australis Couper. Kar 1990a: 174, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinthi, Khadi Hills, Meghalaya; Singh 1990: 218, PALAEOCENE (Tura Formation), Langrin Coalfield, Khadi Hills, Meghalaya; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Handique et al. 1992: 219, MIOCENE (Surma and Tipam groups), Moran Oilfield, Upper Assam; Mandaokar 1993: 139, pl 2, fig 22, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Banerjee & Nandi 1994: 219, pl 1, fig 4, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 36, 94, 100, pl 6, fig 1, pl 9, figs 4, 9, pl 10, fig 8, MIDDLE OLIGOCENE and LATE MIOCENE-PLIOCENE (Jenam, Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Singh & Sarkar 1994: 50, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Sarkar et al. 1994: 201, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand; Mandal et al. 1996: 78, pl 1, fig 1, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao & Rajendran 1996: 65, pl 1, fig 4, MIOCENE, Cannanore District, Kerala; Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwil Bibra area, East Garo Hills District, Meghalaya; Saxena & Rao 1996: 46, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandal 1997: 99, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Samant & Phadtare 1997: 8, pl 1, fig 2, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Sarkar 1997: 109, EOCENE (Subathu Formation), 20 km southeast of Bilaspur on Shimla-Bilaspur Highway, Bilaspur District, Himachal Pradesh; Chandra & Kumar 1998: 65, pl 2, fig 18, LATE TERTIARY, DSDP Leg 23, Site 218, Bengal Fan, Indian Ocean; Mandaokar 2000b: 180, pl 1, figs 4, 9, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Samant 2000: 114, pl 1, fig 1, EARLY EOCENE (Kharsaalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Srivastava & Bhattacharyya 2000: 375, pl 2, fig 1, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West
Cyathidites congoensis Sah. Saxena & Misra 1990: 264, NEOGENE (Ratnagiri Beds), Amberiwi Section, Sindhudurg District, Maharashtra.

Cyathidites cooksoniae Khanna & Singh. Singh et al. 2003: 203, pl 2, fig 6, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Koti areas, Solan District, Himachal Pradesh.

Cyathidites cuthensis Singh et al. Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagharh-Domra Sector, Burdwan District, West Bengal.

Cyathidites dehiscens (Baksi) Salujha et al. Salujha et al. 1991: 65, pl 1, fig 1, NEOGENE, Adamtilla Well-A, Cachar District, Assam.

Cyathidites garoensis (Baksi) Salujha et al. Salujha et al. 1991: 65, pl 1, fig 2, NEOGENE, Adamtilla Well-A, Cachar District, Assam.

Cyathidites giganticus Saxena & Misra 1990: 265-266, pl 1, fig 17, NEOGENE (Ratnagiri Beds), Amberiwi Section, Sindhudurg District, Maharashtra.


Cyathidites minor Couper. Kar 1990a: 174, pl 1, figs 2-4, MIOCENE (Surma and Tipam groups), Rokha Borehole No. 1, Gojaia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 234, 237, 239, EOCENE-EARLY MIOCENE (Disang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Saxena & Misra 1990: 264, pl 1, fig 1, NEOGENE (Ratnagiri Beds), Amberiwi Section, Sindhudurg District, Maharasthra; Singh 1990: 218, pl 2, fig 11, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Kumar & Takahashi 1991: 587, pl 2, fig 1, pl 3, figs 5, 8, EARLY-MIDDLE EOCENE (Laisong and Jenam formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Ramanujam et al. 1991: 2, pl 1, fig 2, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Mandaokar 1993: 139, pl 1, fig 16, pl 2, fig 1, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Shanmukhappa & Koshal 1993: 200, 201, MIDDLE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Banerjee & Nandi 1994: 219, pl 1, fig 1, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 20, 36, 62, 73, 84, pl 2, fig 12, pl 6, fig 6, pl 7, fig 2, pl 30, fig 12, EARLY-MIDDLE EOCENE and MIOCENE (Laisong, Jenam, Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Singh & Sarkar 1994: 50, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwai Bibra area, East Garo Hills District, Meghalaya;
Saxena & Rao 1996: 46, pl 1, fig 1, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Puratlashia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandal 1997: 99, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Sarkar & Prasad 2000b: 147, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Ghaggar river near Kharak village, More Hills, Haryana; Saxena 2000c: 163, pl 1, fig 1, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Trivedi & Saxena 2000: 273, pl 2, figs 1-3, 15, LATE EOCENE (Kopili Formation), Umromgos-Haflong Road near Umromgos, North Cachar Hills District, Assam; Kar & Sharma 2001: 128, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Mandaokar 2002a: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Singh & Kar 2002: 214, PALAEOCENE (Deccan Intertrappean Beds), 3 km northeast of Papro village, Laitipur District, Uttar Pradesh; Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin; Singh & Kar 2003: 219, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Laitipur District, Uttar Pradesh; Singh et al. 2003: 203, pl 2, fig 5, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Koi areas, Solan District, Himachal Pradesh; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmasala and Siwalik), Dharmasala and Nurpur areas, Kangra District, Himachal Pradesh; Chakrabory 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhurban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

**Cyathidites sp.** Rao et al. 1993: 81, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala.

**Cyathidites sp.** Shanmukhappa & Koshal 1993: 195, EARLY EOCENE (Cambay Shale Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat.


**Cyathidites spp.** Mehrotra et al. 2000: 153, PALAEOCENE-EOCENE (Basal Sandstone, Sylhet and Kopili formations), Upper Assam.

**Cyathidites spp.** Kumar et al. 2001: 245, EARLY MIOCENE (Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam.

**Cyathidites spp.** Mandal & Vijaya 2004: 497, LATE OLIGOCENE-EARLY MIOCENE, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

**Cycadaceaelagenella** Maljavkina, MONOPTYCHES.

**Cycadaceaelagenella minor** Kumar & Takahashi 1991: 575, pl 4, fig 7, text-fig 15, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

**Cycadaceaelagenella psilata** Kumar & Takahashi 1991: 575-576, pl 4, figs 11-12, pl 12, fig 6, text-fig 16, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

**Cycadaceaelagenella sp.** Kumar 1994: 80, pl 44, fig 7, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam (wrongly spelt as *Cycadaceaelagenella* sp.).
**CYCADOPITAE** Wodehouse ex Wilson & Webster, CYCADOPHYTA.

**Cycadopites follicularis** Wilson & Webster. Kumar & Takahashi 1991: 576-577, pl 8, fig 2, pl 11, fig 11, EARLY-MIDDLE MIOCENE (Lower and Middle Bhuban formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 50, 58, 80, pl 26, fig 2, pl 44, fig 6, pl 45, fig 11, MIOCENE (Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam.

**Cycadopites cf. follicularis** Wilson & Webster. Kumar 1994: 91, pl 45, fig 11, LATE OLIGOCENE-EARLY MIOCENE (Tikam Formation), Silchar-Haflong Road Section, Assam.

**Cycadopites gracilis** Krutzsch. Kumar & Takahashi 1991: 577, pl 6, fig 12, pl 7, fig 3(cf.), pl 8, fig 14(cf.), LATE OLIGOCENE-EARLY MIOCENE (Renji and Lower Bhuban formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 44, 50, 80, pl 22, fig 9, pl 24, fig 21, pl 26, figs 3, 16, LATE OLIGOCENE-MIOCENE (Renji, Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam.

**Cycadopites sp.** Kumar 1994: 68, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Cycadopites sp.** Rao & Patnaik 2001: 276, pl 3, fig 12, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

**CYCLOGRANISPORITES** Potonie & Kremp, APICULATI.

**Cyclogranisporites gondwanensis** Bharadwaj & Saluja, Gupta et al. 2003: 212, PALAEOCENE-EOCENE, Ganga Basin (Reworked).

**DACTYLOPOLELI** Muller, TRIPTYCHES.

**Dactylopolis magnificus** Muller. Mandal et al. 2003: 102, 104, pl 1, fig 15, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**Dakshinipollenites** Navale & Misra, TRIPTYCHES.

**Dakshinipollenites tripakshii** Navale & Misra. Singh & Misra 1991b: 206, pl 2, figs 1-2, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 57, pl 2, fig 1, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**DANDOTIASPORA** Sah et al., LAEVIGATI.

**Dandotiaspora dilata** (Mathur) Sah et al. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khisi Hills, Meghalaya; Singh 1990: 218, pl 2, fig 3, PALAEOCENE (Tura Formation), Langrin Coalfield, Khisi Hills, Meghalaya; Kumar & Takahashi 1991: 587-588, pl 3, fig 2, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Ambwani 1993: 157, 160, PALAEOCENE, Seam No. 1, Rekmangiri Coalfield, Garo Hills, Meghalaya; Mandaokar 1993: 139, pl 1, figs 14, 26, 29, LATE PLIOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, pl 1, fig 28, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laistribay, Jaintia Hills District, Meghalaya; Tripathi 1995: 46, PALAEOCENE-EOCENE, subsurface sediments near Karundi, Barmer District, Rajasthan; Mandal et al. 1996: 80, pl 1, fig 2, LATE PALAEOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Saxena et al. 1996: 21, pl 1, fig 1, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Karundi, Barmer District, Rajasthan; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Pundeer & Mehrrota 2000: 141, THANETIAN-YPRESIAN.

Dandotiaspora plicata (Sah & Kar) Sah et al. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 234, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Singh 1990: 218, PALAEOCENE (Tura Formation), Langin Coalfield, Khasi Hills, Meghalaya; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Saxena 1991: 370, fig 12, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Kar & Bhattacharya 1992: 251, pl 1, figs 3, 5, 18, 28, EARLY EOCENE, Gujar Dam Section and Akri lignite Kutch District, Gujarat; Ambwani 1993: 160, PALAEOCENE-EARLY EOCENE, Rekmangiri Coalfield, Garo Hills, Meghalaya; Mandaokar 1993: 139, pl 1, figs 17, 20, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Samant 1994: 49, EARLY EOCENE (Bhavnagar lignite, Kharsalia Clay Formation), South Cambay Basin, Gujarat; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Kumar et al. 1995: 1024, fig 3k, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines, Kerala; Saxena 1995: 99, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala (Reworked); Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Saxena et al. 1996: 21, pl 1, fig 2, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Samant & Phadtare 1997: 8, pl 1, figs 3-6, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 14, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Samant 2000: 114, pl 1, fig 2, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Kar & Sharma 2001: 128, pl 1, fig 9, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Samant & Tapasiw 2001: 126, pl 1, fig 1, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmals and Siwalik), Dharmals and Nurpur areas, Kangra District, Himachal Pradesh; Singh & Kar 2003: 219, pl 1, fig 5, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

Dandotiaspora pseudoauriculata Sah et al. Mandaokar 1991: 26, EARLY MIOCENE, north
of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Tripathi 1995: 46, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Singh & Kar 2002: 214, pl 1, figs 1, 11, PALAEOCENE (Deccan Intrterrapine Beds), 3 km northeast of Papro village, Lalitpur District, Uttar Pradesh; Singh & Kar 2003: 219, pl 1, fig 2, PALAEOCENE (Deccan Intrterrapine Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

**Dandotiaspora telonata** Sah et al. Kar 1990a: 175, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojaia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 233, EARLY OLIGOCENE (Laisong Formation), Silch-Haflong Road Section, Assam (Reworked); Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 218, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Mandaokar 1991: 26, EARLY MIocene, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Saxena 1991: 369, fig 7, EARLY MIocene, Varkala and Kundra Clay mines, Kerala; Ambwani 1993: 157, 160, PALAEOCENE, Seam No. 1, Rekmanigri Coalfield, Garo Hills, Meghalaya; Mandaokar 1993: 139, pl 1, fig 24, pl 2, fig 28, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Lalitambah, Jaintia Hills District, Meghalaya; Rao 1995a: 327, pl 1, fig 11, EOCENE-EARLY MIocene, Kalarakod Borehole, Alleppey District, Kerala; Saxena 1995: 99, MIocene (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala (Reworked); Tripathi 1995: 46, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Mandal et al. 1996: 80, LATE PALAEOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Saxena et al. 1996: 21, pl 1, fig 3, PALAEOCENE (Tura Formation), Nongwal Birwa area, East Garo Hills District, Meghalaya; Samant & Phadtar 1997: 8-9, pl 1, fig 7, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Pundeer & Mehrotra 2000: 141, THANETIANTYPRESIAN (Basal Sandstone), Upper Assam Shelf; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmala and Siwalik), Dharmala and Nurpur areas, Kangra District, Himachal Pradesh; Mandal et al. 2003: 102, pl 1, fig 13, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Tripathi et al. 2003: 91, LATE PALAEOCENE (Akill Formation), Barmer Basin, Rajasthan; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhulukurung, North Cachar Hills, Assam; Rao 2004: 125, MIocene (Sindhudurg Formation), Kalivadi, Sindhudurg District, Maharashtra.

**Dandotiaspora vitalii** Samant & Phadtare 1997: 9, pl 1, figs 8-9, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

**Dandotiaspora sp.** Singh et al. 1992: 56, pl 1, fig 1, MIocene (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**Dandotiaspora sp.** Mehrotra et al. 2000: 153, PALAEOCENE-EARLY EOCENE (Basal Sandstone), Upper Assam.

**Dandotiaspora sp.** Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmala and Siwalik), Dharmala and Nurpur areas, Kangra District, Himachal Pradesh.

**DANGRIPITES** Mandaokar, TUBERINI.

**Dangriptites tuberculatus** Mandaokar 1998: 72, pl 1, figs 1-10, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Upper Assam; Mandaokar 2000a: 320, EARLY MIocene (Bhuban Formation), Ramrkawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2002a: 116, EARLY MIocene (Dule Formation), 2 km from Dule village on Dule-Keitfang Road, Aizawl District, Mizoram; Mandaokar
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2002b: 21, pl 2, fig 7, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.

**DELTOIDOSPORA** Minn, **LAEVIGATI**.

**Deltozidospora delicata** Sah. Kumar & Takahashi 1991: 588, pl 16, figs 4-5, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam; Banerjee & Nandi 1994: 216, pl 1, fig 12, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Kumar 1994: 73, 85, pl 39, figs 6-7, pl 40, fig 9, MIOCENE (Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Mandal & Vijaya 2004: 497, LATE OLIGOCENE-EARLY MIOCENE, Borophy PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

**Deltozidospora diaphana** Wilson & Webster. Kumar 1994: 62, pl 32, fig 2, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Deltozidospora cf. diaphana** Wilson & Webster. Kumar & Takahashi 1991: 588-589, pl 9, fig 10, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Deltozidospora cf. diaphana** Wilson & Webster. Kumar 1994: 85, pl 39, fig 1, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

**Deltozidospora hallii** Miner. Kumar & Takahashi 1991: 589, pl 7, fig 10, pl 9, fig 5, pl 10, fig 6, EARLY-MIDDLE MIOCENE (Lower-Middle Bhuban Formation), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Mailbong Railway Station, North Cachar Hills District, Assam; Kumar 1994: 52, 85, 100, pl 25, fig 12, pl 39, fig 9, pl 47, fig 5-7, MIOCENE-PLIOCENE (Bhuban, Bokabil and Dupitila formations), Silchar-Haflong Road Section, Assam; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

**Deltozidospora minor** Miner. Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam.

**Deltozidospora plicata** Singh. Mandal et al. 1996: 78, age not mentioned, mud volcan1o in Baratang Island, Andaman and Nicobar Islands; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

**Deltozidospora sp.** Kar 1990a: 174, pl 1, figs 5-7, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**Deltozidospora spp.** Kar 1990b: 233, 234, 237, 239, EARLY OLIGOCENE-EARLY MIOCENE (Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam.

**Deltozidospora sp A.** Kumar & Takahashi 1991: 589-590, pl 2, fig 10, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

**Deltozidospora sp B.** Kumar & Takahashi 1991: 590, pl 13, fig 1, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

**Deltozidospora sp.** Salujha et al. 1991: 65, pl 1, fig 3, NEOGENE, Adamtila Well-A, Cachar District, Assam.

**Deltozidospora sp.** Kumar 1994: 48, pl 22, fig 2, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

**Deltozidospora sp. A.** Kumar 1994: 14, 142, pl 3, fig 3, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

**?Deltozidospora sp.** Kumar 1994: 62, pl 29, fig 5, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.
Deltoidospora sp. Mandal 1997: 99, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

**DENSIPOLLENITES** Bharadwaj, ALETE-SACCITI.

_Densipollenites indicus_ Bharadwaj, Srivastava & Bhattacharyya 2000: 375, pl 3, fig 7, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

_Densipollenites inquisus_ Bharadwaj & Salujha. Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).


_Densipollenites sp._ Srivastava & Bhattacharyya 2000: 379, pl 3, fig 1, EARLY TERTIARY, Arunachal Pradesh (Reworked).

**DENSIVERRUPOLLENITES** Tripathi & Singh, PYCHOTRIPORINES.

_Densiverrupollenites eocenicus_ Tripathi & Singh. Mandal 1997: 100, pl 2, fig 1, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Trivedi & Saxena 2000: 275, pl 1, fig 5, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.

**DENOISPORITES** Weyland & Krieger, CINGULATI.

_Densoipollenites mesozoicus_ Singh et al. Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked); Mandal et al. 1996: 80, LATE CRETACEOUS, mud volcano in Baratang Island, Andaman and Nicobar Islands.

_Densoipollenites velatus_ Weyland & Krieger. Kar 1990a: 179, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam (Reworked); Trivedi 1991: 67, pl 1, fig 12, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked); Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram (Reworked).

_Densoipollenites sp._ Kar 1990b: 233, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam (Reworked).

_Densoipollenites sp._ Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**DENSOSPORITES** Berry, PYCHOTRIPORINES.


**DERMATOBREVICOLPORITES** Kar, PYCHOTRIPORINES.

_Dermatobrevicolporites alleppeyensis_ Rao 1996: 157, pl 1, figs 9-10, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala.

_Dermatobrevicolporites dermatus_ (Sah & Kar) Kar. Rao 1990: 248, pl 2, fig 28, EOCENE-EARLY
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Dermatobrevicolporites sp. Saxena & Misra 1990: 264, pl 1, fig 19, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra.

Dermatobrevicolporites sp. Rao 2004: 125, 132, pl 3, fig 7, MIOCENE (Sindhudurg Formation), Kalviwadi, Sindhudurg District, Maharashtra.

Dharmsalacolpites Kapoor et al. Nomen nudum.


Dharmsalacolpites in Misra & Kapoor. Nomen nudum.


Dharmsalasporis Saxena & Bhattacharyya 1996, LAEVIGATI.

Dharmsalasporis indicus Saxena & Bhattacharyya 1996: 166, figs 1-2, text-fig 1, MIOCENE (Dharmsala Group), Meledganj-Dharmsala Road Section north of Dharmsala, Kangra District, Himachal Pradesh.

Diatriopollis Weyland & Takahashi, DIPORINES.

Diatriopollis sp. Hait & Banerjee 1994: 117, pl 3, fig 43, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram.

Dicolpopollis Pflanzl, DICOLPATES.
Dicolopollis calamoides Nagy, Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

Dicolopollis cauveriensis Ramanujam et al. 1999: 36-37, pl 2, figs 29-30, 37, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

Dicolopollis edavensis Rao & Ramanujam. Kumar & Takahashi 1991: 543, pl 12, figs 2, 5, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 58, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Dicolopollis elegans Muller. Ramanujam et al. 1991: 54, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1992: 21, fig 2K, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Ramanujam et al. 1997: 131, pl 1, figs 3-4, MIOCENE, Borewell NSP-2 near Narsapur town, West Godavari District, Andhra Pradesh; Ramanujam et al. 1998c: 55, MIOCENE, Borewell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh; Ramanujam et al. 1999: 35, pl 2, fig 32, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu; Mehrotra et al. 2000: 153, MIDDLE EOCENE (Sylhet Formation), Upper Assam (wrongly spelt as Dicolopollenites elegans); Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin.


Dicolopollis kockelii Pflanzl. Hait & Banerjee 1994: 115, pl 1, fig 10, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram (wrongly spelt as Dicolopollis kockelii); Mandaokar 2000b: 183, pl 2, fig 23, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

Dicolopollis malesianus Muller. Kumar & Takahashi 1991: 543-544, pl 1, fig 12, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Ramanujam et al. 1991: 3, pl 2, fig 4, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Kumar 1994: 16, pl 14, figs 8, 13, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Ramanujam et al. 1997: 131, pl 1, figs 1-2, MIOCENE, Borewell NSP-2 near Narsapur town, West Godavari District, Andhra Pradesh; Ramanujam et al. 1998c: 55, MIOCENE, Borewell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh; Ramanujam et al. 1999: 35, pl 2, fig 28, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.
**Dicolpopollis microreticulatus** Rao & Ramanujam. Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 2, fig 5, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Ramanujam et al. 1991: 3, pl 2, fig 5, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Ramanujam et al. 1997: 133, pl 1, figs 9-11, MIOCENE, Borewell NSP-2 near Narsapur town, West Godavari District, Andhra Pradesh; Ramanujam et al. 1998c: 55, MIOCENE, Borewell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh; Mandaokar 2002c: 79, LATE OLIGOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhutan Formation), Champhai area, Eastern Mizo Hills, Mizoram.

**Dicolpopollis sp.** Saxena & Misra 1990: 264, pl 2, fig 2, NEOGENE (Ratnagiri Beds), Amberiwiadi Section, Sindhudurg District, Maharashtra.

**Dicolpopollis sp.** Singh & Tripathi 1990: 329, pl 1, fig 28, MIOCENE (Siwalik sediments), Arunachal Pradesh.

**Dicolpopollis sp.** Saluja et al. 1991: 66, pl 2, figs 40-41, NEOGENE, Adamtila Well-A, Cachar District, Assam.

**Dicolpopollis sp.** Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam.

**Dicolpopollis spp.** Shanmukhappa & Koshal 1993: 195, 202, EARLY and LATE EOCENE (Cambay Shale and Ankleshwar formations), Gandhar area, Broach Depression, Cambay Basin, Gujarat.


**Dicolpopollis sp.** Mandaokar 2000b: 183, pl 2, fig 53, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

**Dicolpopollis sp.** Mehrotra et al. 2000: 153, LATE EOCENE (Kopili Formation), Upper Assam.

**Dicotetradites** Couper, TETRADITES.

**Dicotetradites sp.** Sarkar et al. 1994: 201, pl 2, fig 13, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand.

**Dicotetradites sp.** Singh & Sarkar 1994: 52, pl 1, fig 26, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.
DICTYOPHYLLIDITES Couper, LAEVIGATI.

Dictyophyllidites cannanorensis Rao & Rajendran 1996: 67, pl 1, figs 1-2, MIocene (Quilon Formation), Meenkunnu Phase I, Cannanore District, Kerala.

Dictyophyllidites cherrapunjensis Kar & Kumar. Kar 1990a: 175, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 1991: 26, EARLY MIocene, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Mandaokar 1993: 139, pl 1, figs 28, 30, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

Dictyophyllidites dulcis (Kar) Kar. Kar 1990a: 175, pl 1, fig 16, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 234, 237, 239, EOCENE-EARLY MIocene (Disang, Laosong, Jenji, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIocene, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 1, fig 22, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandal et al. 1996: 78, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypo Colliery, Dilli-Jeypo Coalfields, Dibrugarh District, Assam; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypo Colliery, Dilli-Jeypo Coalfields, Dibrugarh District, Assam; Sarkar & Prasad 2000b: 147, pl 2, fig 5, LATE Ypresian-Middle Lutetian (Subathu Formation), west bank of Ghaggar river near Kharak village, Morni Hills, Haryana.


Dictyophyllidites kyrtomatus Kar & Kumar. Kar 1990a: 175, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Saxena & Misra 1990: 264, NEOGENE (Ranagiri Beds), Amberiwiwa Section, Sindhudurg District, Maharashtra; Singh 1990: 218, PALEOCENE (Tura Formation), Langrin Coalfield, Khadi Hills, Meghalaya; Mandaokar 1991: 26, EARLY MIocene, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Ambwani 1993: 157, 160, PALEOCENE, Seam No. 1, Rekmanjiri Coalfield, Garo Hills, Meghalaya; Mandaokar 1993: 139, pl 1, fig 27, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypo Colliery, Dilli-Jeypo Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypo Colliery, Dilli-Jeypo Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Saxena 2000c: 163, MIocene (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Mandaokar 2003: 188, EARLY MIocene (Middle Bhuban Formation), Lawngtlai, Chhitumtupi District, Mizoram; Chakraborty 2004: 115, pl 1, fig 14, LATE PALEOCENE (Lakadong Sand-
Dictyophyllidites laevigatus Kar. Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 1, figs 21, 31, pl 2, fig 3, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Mandaokar 2002b: 21, pl 1, fig 12, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.


Dictyophyllidites trilobiformis Sah. Mandaokar 1993: 139, pl 2, fig 12, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Banerjee & Nandi 1994: 219, pl 1, fig 2, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Mitra et al. 2000: 126, pl 1, fig 10, NEOCENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.

Dictyophyllidites spp. A-B. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gogalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

cf. Dictyophyllidites sp. Kar 1990a: 182, pl 1, fig 18, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gogalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

Dictyophyllidites sp. Singh & Tripathi 1990: 329, pl 1, fig 13, MIOCENE (Siwalik sediments), Arunachal Pradesh.


Dictyophyllidites sp. Chandra & Kumar 1998: 64, pl 1, fig 1, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

Dictyophyllidites sp. Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram.


Dictyophyllidites sp. A. Rao 2000: 297, pl 1, fig 1, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Dictyophyllidites sp. B. Rao 2000: 297, pl 2, fig 3, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Dictyophyllidites sp. Trivedi & Saxena 2000: 273, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.


Dictyophyllidites sp. Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

Dictyophyllidites sp. Rao 2004: 125, 130, pl 1, fig 1, MIOCENE (Sindhudurg Formation), Kalivadi, Sindhudurg District, Maharashtra.
DILLISPORITES Mandaokar, INCERTAE SEDIS.

Dillisporites karii Mandaokar 1996a: 32, pl 1, figs 1-16, pl 2, figs 1-11, LATE OLIGOCENE (Tikak Parbat Formation), Dilli Colliery, Dibrugarh District, Assam.

DIPORITES van der Hammen, DIPORINES.

Diporites sp. A. Singh 1990: 224, pl 1, figs 7-8, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

DIPOROPOLLIS Dutta & Sah, DIPORINES.


DIPTEROCARPUS POLLENITES Kar, DIPTEROCARPACEAE.


Retitricolpites dipterocarpoides Rao & Ramanujam. Saxena & Misra 1990: 265, pl 3, fig 2, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra; Huit & Banerjee 1994: 115, pl 1, fig 15, EARLY MIOCENE, near Suangpulawon village about 20 km northeast of Aizawl, Mizoram.


Disaccate pollen. Kumar 1994: 77, pl 36, figs 13-14, 17, 20, pl 37, fig 4, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).


DISCOIDITES Muller, TRIPTYCHES.

Discoidites borneensis Muller. Mandal & Kumar 2000: 203, pl 2, fig 4, MIO-PLIOCENE (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam.

Discoidites subcircularis (Salujha et al.) Kumar 1994: 91, LATE MIOCENE-PLIOCENE (Tipam Formation), Silchar-Haflong Road Section, Assam.

Lacrimapollis subcircularis Salujha et al. 1980: 674, pl 2, figs 46, 51, 53, MIOCENE (Bokabil and Tipam subgroups), Tulamura Anticline, South Tripura District, Tripura.

DISULCPOLLIS Krutzsch, DICOLPATES.

Disulcipollis cuddalorensis Ramanujam. Ramanujam et al. 1992: 21, fig 2J, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

Disulcipollis psilatus (Kumar & Takahashi) Ramanujam et al. 1997: 134, pl 1, figs 14-16, MIOCENE, Borewell NSP-2 near Narsapur town, West Godavari District, Andhra Pradesh;
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Ramanujam et al. 1998c: 55, MIOCENE, Borewell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh.

Dicolpopollis psilatus Kumar & Takahashi 1991: 544-545, pl 4, fig 6, pl 12, fig 8, pl 17, fig 9, text-fig 5, MIDDLE OLIGOCENE and MIDDLE-LATE MIOCENE (Jenam, Middle Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 26-27, 58, 69, 91, pl 19, fig 14, pl 20, fig 2, MIDDLE OLIGOCENE and MIOCENE (Jenam, Bhuban and Tipam formations), Silchar-Haflong Road Section, Assam; Banerjee & Nandi 1994: 219, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram.

Disulcites Erdtman, DICOLPATES.


Divarisaccus Venkatachala & Kar, DIVARISACCITI.

Divarisaccus lelei Venkatachala & Kar. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

Dorreenipites Biswas, TRIPORINES.


Dorreenipites cooksonianae Ramanujam 1966: 184, pl 6, figs 100-101, MIOCENE (Neyveli Lignite), Neyveli, South Arcot District, Tamil Nadu.

Dorreenipites distinctus Navale & Misra. Misra et al. 1996: 338, pl 1, figs 11-13, pl 3, figs 1-6, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

Dorreenipites erdtmanii (Ramanujam) Navale & Misra. Misra et al. 1996: 337, pl 1, figs 1-6, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Ramanujam et al. 1998c: 55, fig 10, MIOCENE, Borewell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh; Ramanujam et al. 1999: 36, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

Trilatiporites erdtmanii Ramanujam. Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Singh et al. 1992: 56, pl 1, fig 9, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Rao et al. 1993: 81, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu.


Dorreenipites medius Navale & Misra. Misra et al. 1996: 339, pl 2, figs 4-7, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Ramanujam et al. 1999: 36, pl 2, fig 44, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

Dorreenipites neyveliensis Misra et al. 1996: 339, pl 2, figs 2-3, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Ramanujam et al. 1999: 36, pl 2, fig 42,
Dorreenipites psilatus Misra et al. 1996: 343, 341, pl 2, figs 8-13, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.


Dorreenipites undulatus Misra et al. 1996: 339, 341, pl 1, figs 7-10, pl 2, fig 1, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

Dorreenipites sp. Ramanujam et al. 1999: 39, pl 2, fig 43, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.


Trilatiporites truncatus Sarma et al. 1984: 108, pl 1, fig 18, MIOCENE (Neyveli Lignite), Neyveli, South Arcot District, Tamil Nadu.

Trilatiporites undulatus Misra et al. 1996: 339, 341, pl 2, figs 8-13, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

Trilatiporites sp. Ramanujam et al. 1999: 39, pl 2, fig 43, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

**MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.**

**DORREENIPITES** Misra et al. 1996: 341, 343, 341, 341, pl 2, figs 8-13, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

**DORREENIPITES** sellingii (Ramanujam) Navale & Misra. Misra et al. 1996: 341, pl 3, figs 1-4, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Ramanujam et al. 1999: 36, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

**DORREENIPITES** undulatus Misra et al. 1996: 339, 341, pl 1, figs 7-10, pl 2, fig 1, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

**DORREENIPITES** sp. Ramanujam et al. 1999: 39, pl 2, fig 43, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

**TRILATIPORITES** sellingii Ramanujam. Saxena & Khare 2004: 75, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**TRILATIPORITES** truncatus Sarma et al. 1984: 108, pl 1, fig 18, MIOCENE (Neyveli Lignite), Neyveli, South Arcot District, Tamil Nadu.

**TRILATIPORITES** undulatus Misra et al. 1996: 339, 341, pl 2, figs 8-13, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

**TRILATIPORITES** sp. Ramanujam et al. 1999: 39, pl 2, fig 43, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

**DRACAEANOIPOLLIS** Sah & Kar, MONOPORINES.

**Dracaenoipollis crasslexinus** Ramanujam et al. 1999: 36, pl 2, fig 31, 38, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

**ROSERAPOLLIS** Krutzsch, TETRADITES.

**Droserapollis khasiensis** Kumar 1995: 70, pl 1, fig 6, pl 2, figs 1-3, PALAEOCENE (Lakadong Sandstone), Laitrnygew, Khasi Hills, Meghalaya.

**DROSERIDITES** Cookson ex Potonié, TETRADITES.

**Droseridites major** Krutzsch in Ambwani = *Nepenthidites laitryngewensis* Kumar.

**Droseridites parvus** Dutta & Sah = *Nepenthidites laitryngewensis* Kumar.

**Droseridites spinosa** (Cookson) Potonié. Kumaran et al. 1995: 1024, fig 4c, MIOCENE (Warkall Formation), Bharathi and Kundra Clay Mines, Kerala; Saxena 2000c: 163, pl 2, fig 11,
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**Droseridites sp.** Singh et al. 1992: 57, pl 2, fig 15, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**Droseridites sp.** in Kar & Kumar. Singh 1990: 224, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

**Droseridites sp.** Ambwani 1993: 157, PALAEOCENE, Seam No. 1, Rekmangiri Coalfield, Garo Hills, Meghalaya.

**Droseridites sp.** Kapoor et al. 2003: 183, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**Dulhuntyispora** Potonié, TRILETES.

**Dulhuntyispora dulhuntyi** Potonié. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 233, 237, EARLY and LATE OLIGOCENE (Laisong and Renji formations), Silchar-Haflong Road Section, Assam (Reworked); Venkatachala & Kar 1990a: 177-178, figs 2a-d, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam, MIOCENE, Rokhia Borehole, Tripura (Reworked).

**Duplibaculatepollis** Kar & Sharma, POLYPTYCHES.

**Duplibaculatepollis pentacolpites** Kar & Sharma 2001: 130, 137, pl 5, fig 9, pl 7, figs 6, 8, 12, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

**Duplibaculatepollis septacolpites** Kar & Sharma 2001: 130, 137, pl 6, figs 6-7, 9, 11, 13, pl 7, fig 10, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

**Durgaipollenites** Mathur & Chopra, PTYCHOTRIPTORINES.

**Durgaipollenites galsii** Mathur & Chopra. Mandal & Kumar 2000: 204, pl 2, figs 5-6, MIOCENE-PLIOCENE (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam; Kumar et al. 2001: 244, fig 5.8, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.

**Echidiporites** Mandal, DIPORINES.

**Echidiporites indicus** Mandal 1997: 102, pl 2, figs 12-13, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

**Echidiporites sp.** Mehrotra et al. 2000: 153, LATE EOCENE (Kopili Formation), Upper Assam.

**Echimonocolpites** van der Hammen & Garcia de Mutis, RETECTINES.


**Echimonocolpites sp.** Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.

**Echimonoporopollis** Saxena et al., MONOPORINES.

**Echimonoporopollis circularis** Samant & Tapaswi 2001: 124, pl 2, fig 1, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeghar, Surat District and Valia, Bharuch District, Gujarat.

**Echimonoporopollis grandiporus** Saxena et al. 1991: 48, pl 1, figs 1-5, PALAEOCENE (Neyveli
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Echimonoporopollis neyveliensis Saxena et al. 1991: 48, pl 1, fig 6, PALAEOCENE (Neyveli Formation), Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu; Saxena & Khare 2004: 74, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


Echistephanocolpites boldamgiriensis Saxena & Rao 1996: 52, pl 2, figs 14-15, EARLY MIocene (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Rao 2000: 297, pl 1, fig 7, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Echistephanocolpites meghalayaensis Rao et al. Saxena & Rao 1996: 48, pl 2, fig 13, EARLY MIocene (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Echistephanocolpites quadrangularis Rao 2000: 299, 301, pl 1, figs 5-6, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Echistephanocolpites sp. Tripathi et al. 2000: 246, pl 1, fig 15, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

ECHISTEPHANOCOLPITES Wijmstra, POLYPTYCINES.

Echistephanocolpites irregul aris Muller. Kumar 1994: 27, pl 18, fig 14, MIDDLE OLIGOCENE (Jenam Formation), Silcher-Haflong Road Section, Assam.

**Echitriporites sp.** Ramanujam et al. 1992: 22, figs 3N, O, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

**ELILASACCITES** 
Bose & Kar, MONOSACCITES.

**Elilasaccites elilaensis** Bose & Kar. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

**ENGELHARDTIOIDITES** Potonié et al., TRIPORINES

**Engelhardtioidites minutiformis** Ramanujam. Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.


**EPHEDRIPITES** Bolkhovitina ex Potonié, COSTATI.

**Ephedrites sp.** Kar 1990a: 176, pl 7, figs 109-110, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**Ephedrites sp.** Kumar & Takahashi 1991: 577, pl 13, fig 5, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Ephedrites sp.** Mitra et al. 2000: 126, pl 1, fig 13, NEOGENE (Siwalik Group), Darjeeling Foot hills, Eastern Himalaya.

**Ephedrites sp.** Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin.

**EQUISETOSPORITES** Daugherty, APPENDICIFERI.

**Equisetosporites spp.** Kumar 1994: 27, 44, 68, pl 13, fig 7, pl 17, figs 2, 16, pl 19, fig 7, pl 20, fig 7, pl 21, fig 9, pl 22, fig 17, pl 37, fig 5, MIDDLE OLIGOCENE-MIDDLE MIOCENE (Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam.

**ERICIPITES** Wodehouse, TETRADITIES.

**Eripites choprae** Saxena 1992b: 532.

**Eripites congoensis** Sah. Kar 1990a: 178, pl 6, fig 97, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Rao 1995a: 327, pl 4, figs 6-7, EOCENE-EARLY MIOCENE, Kalarakkod and Nirkunnam Boreholes, Alleppey District, Kerala; Saxena 1995: 97, 99, fig 41, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala; Rao 1996: 157, pl 1, fig 16, EARLY MIOCENE, Turavur.
Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram.

**Ericipites laevigatus** Kumar 1995: 74, 76, pl 1, figs 4-5, 7, PALAEOCENE (Lakadong Sandstone), Laitrunggew, Khasi Hills, Meghalaya.


**Ericipites scabratus** Mathur & Chopra (non Sah 1967) = **Ericipites choprae** Saxena.

**Ericipites sp.** Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya.

**Eximispora sp.** Mandaokar 1993: 139, MIDDLE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya.

**Falcisporites stabilis** Balme. Mandal et al. 1996: 80, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Srivastava & Bhattacharya 2000: 375, pl 3, fig 4, EARLY TERTIARY, south-west of the thrust in Tipi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked); Kumar et al. 2001: 247, fig 5.18, OLIGOCENE (Baratang Group), Tiniali Well-7, Upper Assam (Reworked); Mandal et al. 2003: 102, 104, pl 3, fig 5, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**Falcisporites sp.** Trivedi 1991: 67, pl 1, fig 2, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

**Eximispora tuberculata** Salujha et al. Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Salujha et al. 1991: 65, pl 1, fig 18, NEogene, Adamtala Well-A, Cachar District, Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, pl 1, fig 18, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Saxena & Sarkar 2000: 257, MIDDLE EOCENE (Siju Formation), Simsang River Section near Siju, South Garo Hills District, Meghalaya.

**Falcisporites sp.** Trivedi 1991: 67, pl 1, fig 2, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

**Eximispora sp.** Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam.

**EXTREMIPOLLIS** Krutzsch in Góczán et al., TRIPORINES.

**Extremipollis versatilis** Tschudy. Gupta et al. 2003: 591, fig 3a, PALAEOGENE, Ganga Basin (wrongly spelt as Extremipollis versatalis)

**FALCISPORITES** (Leschik) Klaus, DISACCIATRILETES

**Falcisporites sp.** Trivedi 1991: 67, pl 1, fig 2, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

**FAUNIPOLENITES** Bharadwaj, STRIATITI.


**Faunipollenites varius** Bharadwaj. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked); Srivastava & Bhattacharya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tipi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked);
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Mandal et al. 2003: 100, pl 2, fig 2, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

FAVITRICOLPORITES Sah., PTYCHOTRIPORINES.

Favitricolporites delicatus Saluja et al. Kumar 1994: 68, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.


Favitricolporites grandis Venkatchalula & Rawat. Tripathi et al. 2000: 245, pl 2, fig 4, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.


Favitricolporites microreticulatus Sah. Mitra et al. 2000: 126, pl 1, fig 27, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

Favitricolporites ornatus Sah. Kumar & Takahashi 1991: 545-546, pl 5, fig 1, MIDDLE Oligocene (Jenam Formation), Silchar-Haflong Road Section, Assam; Kar et al. 1994: 186, pl 1, fig 6, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 27-28, pl 18, fig 1, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

Favitricolporites retiformis Sah. Saxena & Misra 1990: 264, pl 3, fig 10, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.


Favitricolporites suratensis Samant & Tapaswi 2001: 123-124, pl 1, fig 9, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Vala, Bharuch District, Gujarat.

cf. Favitricolporites sp. Kumar 1994: 80, LATE MIOCENE (Bokabili Formation), Silchar-Haflong Road Section, Assam.

Favitricolporites sp. Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.


FLORINITES Schopf et al., ALETESACCITI.
Florinites spp. Mehrotra et al. 2001: 241, pl 1, fig 3, EARLY EOCENE (Panna Formation), Bombay Offshore, Arabian Sea (Reworked).

**FLORSCHUETZIA** Germeraad et al. TRIPORINES.


Florschuetzia meridionalis Germeraad et al. Kumar 1994: 98, LATE MIOCENE-PLIOCENE (Dupitila Formation), Silchar-Haflong Road Section, Assam.

Florschuetzia cf. meridionalis Germeraad et al. Kumar 1994: 80, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Florschuetzia rajpardiensis Samant & Phadtare 1997: 25, pl 5, fig 1, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, EARLY EOCENE (Kharaslia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

Florschuetzia trilobata Germeraad et al. Kumar 1994: 28, pl 17, fig 8, pl 18, fig 9, pl 19, fig 5, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

cf. Florschuetzia trilobata Germeraad et al. Kumar 1994: 50, pl 24, fig 10, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Florschuetzia sp. Kumar & Takahashi 1991: 546, pl 4, fig 10, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.


**FORAMINISPORS** Krutzsch. MURORNATI.

Foraminisporis medius Dutta & Sah. Banerjee & Nandi 1994: 219, pl 1, fig 9, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram.

**FORCIPITES** in Misra & Kapoor. Nomen nudum.


**FOVEOMONOLETES** van der Hammen ex Mathur, MONOLETES.

Foveomonoletes sp. Mandal 1997: 99, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

Foveomonoletes sp. Rao 2000: 299, pl 1, fig 4, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

**FOVEOSPORITES** Balme, MURORNATI.

Foveosporites canalis Balme. Sarkar et al. 1994: 201, pl 2, fig 1, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

Foveosporites miocenicus Ramanujam. Ramanujam et al. 1991: 3, pl 1, figs 6, 8, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

Foveosporites pseudoreticulatus Dutta & Sah. Kumar & Takahashi 1991: 590-591, pl 16, fig 8,
LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 85, pl 39, fig 14, pl 41, fig 1, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

**Foveosporites retiformis** Salujha et al. Singh & Sarkar 1994: 50, pl 1, fig 9, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Kapoor et al. 2003: 182, OLIGOCENE-NEogene (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**Foveosporites spectabilis** Salujha et al. Salujha et al. 1991: 65, pl 1, fig 6, NEOGENE, Adamtila Well-A, Cachar District, Assam.

**Foveosporites splendus** Dutta & Sah. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjina, Khasi Hills, Meghalaya; Kumar 1994: 36, pl 6, fig 8, pl 7, fig 9, pl 8, figs 1, 9, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.

**Foveosporites triangulus** Dutta & Sah. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjina, Khasi Hills, Meghalaya; Kumar 1994: 36, pl 6, fig 8, pl 7, fig 9, pl 8, figs 1, 9, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.

**Foveosporites sp.** Kumar & Takahashi 1991: 591, pl 18, fig 15, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 85, pl 46, fig 18, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

**Foveosporites sp.** Saxena et al. 1996: 21, pl 1, fig 12, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.

**Foveosporites sp.** Rao 2000: 297, pl 1, fig 19, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

**Foveosporites sp.** Singh & Kar 2003: 219, pl 1, figs 10-11, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

**FOVEOTRICOLPITES** Pierce, TRIPTYCHES.

**Foveotricolpites alveolatus** Mandal & Rao 2001: 353, pl 2, figs 4, 14, PALAEOCENE (Therria Formation), Meghalaya.

**Foveotricolpites iniquus** (Salujha et al.) Mandal & Rao 2001: 353, MIDDLE OLIGOCENE (Jenam Formation), Assam.

**Foveotricolpites prolatus** Rao & Ramanujam. Saxena & Misra 1990: 264, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra; Ramanujam et al. 1992: 21, fig 2M, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

**Foveotricolpites sijuensis** (Baksi) Mandal & Rao 2001: 353.

**Reticulotricolpites sijuensis** Baksi 1962: 16, pl 1, fig 6, EARLY MIDDLE EOCENE, Simsang River Section, Shillong Plateau, Meghalaya.


**Retibrevotricolpites simplex** Rao & Ramanujam 1982: 71, pl 1, fig 9, MIOCENE (Quilon Formation), Kerala.

**Foveotricolpites tamilensis** Saxena & Khare 2004: 74, 80, pl 1, fig 17, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondachalapuram Well 12, Tiruchirapalli District, Tamil Nadu.
FOVEOTRICOLPORITES
PTYCHOTRIPORINES.

Foveotricolporites foveolatus Nandi. Hait & Banerjee 1994: 116, pl 1, fig 16, EARLY MIOCENE, near Suangpuiawlown village about 20 km northeast of Aizawl, Mizoram.


Foveotriletes Potonié, MURORNATI.

Foveotriletes garoensis Saxena & Rao 1996: 50, pl 1, figs 9, 11, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Foveotriletes pachyexinous Dutta & Sah. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Tripathi et al. 2003: 91, LATE PALAEOCENE (Ailiki Formation), Barmer Basin, Rajasthan.

Foveotriletes triangulus Krutzsch. Kumar & Takahashi 1991: 591, pl 16, figs 9, 12, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 85, 94, pl 46, fig 18, LATE MIOCENE-PLIOCENE (Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam.


FRAXINOIPOLLENITES Potonié ex Potonié, TRIPTYCHES.

Fraxinoipollenites sp. Kumar 1994: 91, LATE MIOCENE-PLIOCENE (Tipam Formation), Silchar-Haflong Road Section, Assam.

GANGAPOLLENITES Mathur & Chopra = PSEUDONOTHOFAgidites Venkatachala & Kar, POLYPORINES.


GAROTRILETES Singh & Singh, MURORNATI.


Garotrilites kheraparaensis Rao 2000: 297-298, pl 1, figs 17-18, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Mandal & Vijaya 2004: 497, LATE OLIGOCENE-EARLY
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MIocene, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

Geminospora Balme, Zonotriletes.


Gemmamonocolpites van der Hammen & Garcia de Mutis, Monoptyches.

Gemmamonocolpites dimorphous Singh 1990: 224, pl 1, figs 1-2, Palaeocene (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

Gemmamonocolpites hyphaeneoides Ramanujam et al. 1999: 36, pl 1, figs 1-3, Miocene, South Arcot and Thanjavur districts, Tamil Nadu.

Gemmamonocolpites sp. Rao & Rajendran 1996: 72, pl 3, fig 6, Miocene (Quilon Formation), Meenkunnu Phase II, Cannanore District, Kerala.

Gemmastephanocolpites sp. Rao & Rajendran 1996: 70, pl 2, figs 10-12, Miocene (Quilon Formation), Meenkunnu Phase I, Cannanore District, Kerala.


Gemmatriporopollis Saxena & Khare, Triporines.

Gemmatriporopollis triangulus Saxena & Khare 1996: 130, figs 1-3, text-fig 1, Palaeocene-Eocene, Jayamkondacholapuram Well-12, Tiruchirapalli District and Neyveli lignite mines, South Arcot District, Tamil Nadu; Saxena & Khare 2004: 74, 85, pl 2, figs 6-7, Late Palaeocene-Middle Eocene, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Ghoshiacolpites Sah & Kar, Polyptyches.

Ghoshiacolpites globatus Sah & Kar. Rao 2000: 297, Oligocene (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Ghoshiaspora Srivastava, Triletes.


Ginkgocycadophytus Samoilovich, Intortes.


Ginkgocycadophytus sp. Mandal et al. 2003: 102, Eocene (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Re-worked).

Ginkgoretectina Maljakovina, Retextines.

Ginkgoretectina sp. Kumar & Takahashi 1991: 577-578, pl 15, fig 2, Early Late Miocene (Upper Bhutan Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 68, pl 37, fig 13,
EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

GLEICHENIIDITES Ross, LAEVIGATI.

Gleicheniidites concavus Saxena & Khare 2004: 73, 75, pl 1, figs 1-2, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondachalapuram Well 12, Truchirapalli District, Tamil Nadu.

Gleicheniidites indicus Mathur & Chopra (non Singh et al. 1964) = Gleicheniidites mathurii Saxena.


Gleicheniidites indicus Mathur & Chopra 1982 (non Singh et al. 1964): 56, pl 1, fig 12, LATE MIOCENE, Galsi Well no. 3, Bengal Basin, West Bengal.

Gleicheniidites senonicus Ross. Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Mandal et al. 1996: 78, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mitra et al. 2000: 126, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.


cf. Gleicheniidites sp. Kumar 1994: 77, EARLY-MIDDELE MIOCENE (Bhurban Formation), Silchar-Haflong Road Section, Assam.

Gleicheniidites sp. Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

Gleicheniidites sp. Misra et al. 1996: 96, EARLY MIOCENE (Baghmara Formation), Tura-Dalu Road Section along Bugi River and in the vicinity of Baghmara, Garo Hills, Meghalaya.

GNEUDNASPORA Balme, INCERTAE SEDIS.


GONDISPORITES Bharadwaj, CINGULATI.

Gondisporites sp. Gupta et al. 2003: 212, pl 2, fig 6, PALAEOCENE-EOCENE, Ganga Basin.

Gondisporites Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

GOTHANIPOLLIS Krutzsch, TRIPTYCHES.

Gothanipollis indicus Rao & Ramanujam. Ramanujam et al. 1991: 57, pl 1, fig 20, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 3, fig 6, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.


GOUBINISPORA Tiwari & Rana, STRIASACCITI.

Goubinispora indica Tiwari & Rana. Mandal et al. 2003: 102, pl 3, fig 4, EOCENE (Baratang...
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Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**GRAMINIDITES** Cookson ex Potonié, MONOPORINES.

**Graminidites assamicus** Sah & Dutta. Saluja et al. 1991: 67, pl 2, fig 50, NEOGENE, Adamtila Well-A, Cachar District, Assam; Hait & Banerjee 1994: 117, pl 2, fig 37, EARLY and LATE MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl and around Champhai, Mizoram.

**Graminidites granulatus** Kar. Mandaokar 1991: 27, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Mandaokar 1996b: 42, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Keifang Formation, western flank of Aizawl Hills, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Llawngtla, Chhitumtupui District, Mizoram; Mandaokar 2004: 116, EARLY MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizos Hills, Mizoram.

**Graminidites media** Cookson. Hait & Banerjee 1994: 117, pl 2, fig 36, EARLY and LATE MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl and around Champhai, Mizoram; Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Misra & Kapoor 1994: 150, 152, pl 1, fig 20, PALAEOCENE-EARLY EOCENE and MIDDLE MIOCENE (Subathu and Basal Dharmsala and Lower Siwalik), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mitra et al. 2000: 126, pl 1, fig 14, NEOGENE (Siwalik Group), Darjeeling foothills, Eastern Himalaya; Saxena & Sarkar 2000: 257, pl 2, fig 1, MIDDLE EOCENE (Siju Formation), Sinsang River Section near Siju, South Garo Hills District, Meghalaya; Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin..

cf. **Graminidites media** Cookson. Kumar 1994: 28, pl 2, fig 14, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

**Graminidites pliocenicus** Singh & Saxena. Singh & Sarkar 1994: 50, pl 1, fig 23, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.


**Graminidites siwalikus** Rao & Patnaik 2001: 278, pl 1, figs 18-20, LATE Pliocene (Pinjor Formation), Nadah, Panchkula, Haryana.

**Graminidites sp.** Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam.

**Graminidites sp.** Hait & Banerjee 1994: 117, pl 2, fig 35, EARLY and LATE MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl and around Champhai, Mizoram.


**Graminidites spp.** Kumar 1994: 68, 91, pl 38, fig 14, MIOCENE-PLIOCENE (Bhuban and Tipam formations), Silchar-Haflong Road Section, Assam.

**Graminidites sp.** Mehrotra et al. 2000: 153, MIDDLE EOCENE (Sylhet Formation), Upper Assam.

**GRANUSTEPHANOCOLPITES** Saxena, POLYPTYCHES.

**Granustephanocolpites cooksoniae** (Sah & Dutta) Saxena et al. 1996: 21, pl 3, figs 5-6, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.


**Granustephanocolpites sp.** Saxena & Bhattacharyya 1990: 112, pl 2, figs 6-7, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Churan Khad Section near Dharmsala, Kangra District, Himachal Pradesh.

**Granustephanocolpites sp.** Sarkar et al. 1994: 201, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

**GREVILLOIDEAEPITIS** Biswas, TRIPORINES.


**Triorrites bellus** Sah & Kar. Kapoor et al. 2003: 183, OLIGOCENE-NEOCENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.
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*Triangulorites inferius* (Dutta & Sah) Kar & Kumar. Chakraborty 2004: 116, pl 1, fig 8, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

*Triangulorites inferius* Dutta & Sah 1970: 49-50, pl 9, figs 29-32, PALAEOCENE (Cherra Formation), Umstew, Shillong Plateau, Meghalaya.


**Haloragacidites myriophyloides** Cookson & Pike. Ramanujam et al. 1991: 54, pl 1, fig 15, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1992: 22, fig 3Q, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

**Haloragacidites neyvelii** Ramanujam. Samant & Phadtare 1997: 25, pl 5, fig 2, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 2, fig 11, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

**GRIMSDALEA** Germeraad et al., ALETES.

**Hamiapollenites sp.** Ramanujam et al. 1990b: 232, EOCENE (Disang Group), Silchar-Haflong Road Section, Assam (Reworked).

**Hamulatisporis sp.** Chandra & Kumar 1998: 65, pl 1, fig 2, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean (wrongly spelt as *Hammulatisporites* sp.).

**HETEROCOLPITES** van der Hammen, TRIPTYCHES.


**Heterocolpites granulatus** Rao & Ramanujam. Ramanujam et al. 1992: 22, fig 3H, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao
R. K. Saxena and G. K. Trivedi

et al. 1993: 82, EARLY MIocene, Thakkazhi Borewell, Alleppey District, Kerala.

**HIBISCEAEPOLENITES** Kar, PERIPORITI.

**Hibisceaepollenites robustispinosus** Kar 1990a: 194, pl 6, figs 90-91, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 1996b: 42, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Chandra & Kumar 1998: 66, pl 2, fig 3, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean; Mandaokar 2000b: 181, pl 1, fig 2, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

**Hibisceaepollenites splendus** Kar. Kar 1990a: 192, 198, pl 6, figs 95-95, pl 9, fig 129, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Ramanujam et al. 1992: 22, fig 3X, EARLY MIocene (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Kar et al. 1994: 186, pl 2, fig 38, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 2000a: 320, EARLY MIocene (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram (Reworked).

**Hindipollenites spp. A-B.** Kar 1990a: 178, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**Hindipollenites sp.** Kar 1990b: 240, EARLY MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

**Hippocrateaceaedites quilonensis** Rao & Ramanujam. Ramanujam et al. 1991: 3, pl 2, fig 9, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

**Hippocrateaceaedites vancampoae** Ramanujam. Ramanujam et al. 1992: 22, fig 3I, EARLY MIocene (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Saxena & Khare 2004: 74, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Truchirapalli District, Tamil Nadu.

**Horniella** Traverse, PTYCHOPOLYPORINES.

HORRIDITRILETES Bharadwaj & Salujha, APICULATI.


Horriditriletes sp. Trivedi 1991: 67, pl 1, fig 8, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

HYMENOZONOTRILETES Naumova, ZONATI.

Hymenozonotriletes sp. Salujha et al. 1991: 65, pl 1, fig 20, NEOGENE, Adamtila Well-A, Cachar District, Assam.

ICACINOIPOLLENITES Navale & Misra, TRIPTYCHES.

Icacinopollenites Singh et al. 1992: 58, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

ILEXPOLLENITES Thiergart ex Potonié, PROLATI.


Ilexpollenites sp. Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam.

IMPATIENSIDITES Sah, POLYPTYCHES.

Impatiensidites brevicolpus Sah. Sarkar et al. 1994: 201, pl 2, fig 22, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.


INAPERTUROPOLLENITES Pflug & Thomson in Thomson & Pflug, PSILONAPITI.

Inaperturopollenites dubius (Potonié & Venitz) Thomson & Pflug. Kumar 1994: 12, 28, 68, 81, 91, 98, pl 1, figs 14a, b, pl 7, fig 11, pl 14, fig 3, pl 35, fig 2, pl 48, fig 3, LATE CRETACEOUS-EOCENE, MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Disang, Jenam, Bhuban, Bokabil, Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam.

Inaperturopollenites hiatus (Potonié) Thomson & Pflug. Saxena & Bhattacharyya 1990: 111, pl 2, fig 1, OLIGOCENE-EARLY MIOCENE (Dharmasala Group), Churan Khad Section near Dharmasala, Kangra District, Himachal Pradesh.

Inaperturopollenites laevigatus Takahashi. Kumar 1994: 28, 68, 81, 91, pl 10, fig 7, pl 19, fig 21, pl 36, fig 18, MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Jenam, Bhuban, Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam.

Inaperturopollenites minimus Takahashi & Jux. Kumar 1994: 12, 28, 50, 58, 68-69, 91, pl 1, figs 11a, b, pl 13, fig 8, pl 16, fig 7, pl 20, fig 3, pl 24,
In *Inaperturopollenites mirabilis* Saluja et al. 1991: 66, pl 1, fig 28, NEOGENE, Adamtila Well-A, Cachar District, Assam.

In *Inaperturopollenites parvus* Takahashi. Kumar 1994: 81, 91, pl 43, fig 6, pl 46, fig 8, LATE MIOCENE-PLIOCENE (Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam.

In *Inaperturopollenites punctatus* (Saxena) Saxena & Bhattacharyya. Saxena & Bhattacharyya 1990: 112, pl 1, fig 13, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Churan Khad and Manjhi Khad sections near Dharmsala, Kangra District, Himachal Pradesh; Saxena & Misra 1990: 265, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

In *Inaperturopollenites sp.* cf. *Inaperturopollenites punctatus* Saxena & Bhattacharyya. Rao 2000: 301, pl 2, fig 9, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.


*INAPERTUROTETRADITES* van Hoeken-Klinkenberg, TETRADITES.


In *Inaperturotetradites sp.* 1. Saxena & Misra 1990: 265, pl 2, fig 7, NEOGENE (Ratnagiri Beds),
Amberiwadi Section, Sindhudurg District, Maharashtra.

**Inaperturotetradi**tes sp. 2. Saxena & Misra 1990: 265, pl 2, fig 3, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra.

**INCROTONIPOLLIS** Jansonius & Hills, ALETES.

**Incrotonipollis burdwanensis** (Baksi et al.) Jansonius & Hills, Tripathi et al. 2003: 91, LATE PALAEOCENE (Aklí Formation), Barmer Basin, Rajasthan.

**Incrotonipollis neyvelii** (Baksi et al.) Jansonius & Hills. Samant & Phadtare 1997: 25-26, pl 5, figs 3-5, EARLY EOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked).

**Indotriradites sp.** Kar 1990b: 239, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

**Indotriradites surangei** Tiwari. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked).

**Indotriradites sp.** Singh et al. 1991: 41, pl 1, fig 10, pl 2, fig 7, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

**Indotriradites sp.** Trivedi 1991: 67, pl 1, figs 3, 7, EARLY EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

**Indotriradites sp.** Trivedi & Saxena 2000: 275, pl 1, fig 11, EARLY EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam (Reworked).

**INTERPOROPOLLENITES** Weyland & Krieger, TRIPORINES.

**Interporopollenites sp.** Gupta et al. 2003: 591, fig 3b, PALAEogene, Ganga Basin.

**INTERTRILETES** Anderson, MURORNA.

**Intertriletes reticulatus** Kumar & Takahashi 1991: 591-592, pl 3, fig 3, text-fig 19, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 37, pl 9, fig 3, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

**INTRABACULISPORIS** Kedves & Rakosy, LAEVIGATI.

INTRAPUNCTISPORIS Krutzsch, LAEVIGATI.

Intrapunctisporis apunctis Krutzsch. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia borehole No. 1, Gojalia borehole No. 1 and Baramura borehole No. 2, Tripura; Kar 1990b: 233, 234, 239, EARLY-MIDDLE OLIGOCENE and EARLY MIOCENE (Laisong, Jenam and Bhurban formations), Silchar-Haflong Road Section, Assam; Rao and Nair 1998: 52, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala.

Intrapunctisporis intrapunctis Krutzsch. Kar 1990b: 232, 233, 237, EOCENE, EARLY and LATE OLIGOCENE (Disang, Laisong and Renji formations), Silchar-Haflong Road Section, Assam; Rao 1990: 248, pl 1, fig 22, EOCENE-EARLY MIOCENE, Arthungal borehole, Alleppey District, Kerala; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 1, fig 25, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, pl 1, fig 1, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 2, fig 3, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Saxena 2000c: 163, pl 1, fig 2, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

Intrapunctisporis gigantica Kar & Kumar. Saxena & Khare 2004: 73, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondachalapuram Well 12, Trichirapalli District, Tamil Nadu.


Intrapunctisporis intrapunctis Krutzsch. Kar 1990b: 232, 233, 237, EOCENE, EARLY and LATE OLIGOCENE (Disang, Laisong and Renji formations), Silchar-Haflong Road Section, Assam; Rao 1990: 248, pl 1, fig 22, EOCENE-EARLY MIOCENE, Arthungal borehole, Alleppey District, Kerala; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 1, fig 25, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Sarkar et al. 1994: 201, pl 2, fig 21, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao & Rajendran 1996: 65, MIOCENE, Cannanore District, Kerala; Saxena et al. 1996: 21, pl 1, fig 15, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River section, Tinsukia District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 2, fig 12, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, pl 2, fig 5, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 187,
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EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhitmutlipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Intrapunctisporis plicatus Saxena & Rao 1996: 48-50, pl 1, figs 5-6, EARLY MIOCENE (Bol damgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.

Intrapunctisporis subtriangularis Kar & Singh. Singh & Tripathi 1990: 329, pl 1, fig 22, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Intrapunctisporis sp. Kar & Bhattacharya 1992: 26, pl 1, fig 31, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.

Intrapunctosporis Krutzsch, LAEVI GATOMONOLETI.

Intrapunctosporis cacharensis Kumar & Takahashi 1991: 592-593, pl 3, fig 6, pl 4, fig 3, text-fig 20, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 37, 52, pl 11, fig 3, pl 13, fig 10, pl 26, fig 13, MIDDLE OLIGOCENE and EARLY MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam (wrongly spelt as Intrapunctatosporis cacharensis).

Intrapunctosporis cf. cacharensis Kumar 1994: 85, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam (wrongly spelt as Intrapunctatosporis cf. cacharensis).

Intrapunctosporis sp. Kumar & Takahashi 1991: 593-594, pl 17, fig 2, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

IRIDACIDITES Ramanujam, MONOPTYCHES.


Iridacidites sp. Singh et al. 1991: 42, OLIGOCENE (Barail Group), Sonapur-Badar pur Road Section, Jaintia Hills District, Meghalaya (Reworked).

IUGOPOLLIS Venkatchala & Rawat, POLYPORINES.

Iugopollis tetraporites Venkatchala & Rawat. Samant & Phadtare 1997: 26, pl 5, figs 7-8, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 2, fig 12, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY
R. K. Saxena and G. K. Trivedi

EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

_Reqopolis_ sp. Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.

_Jacobipollenites_ Ramanujam, MONOPORINES.


_Jacobipollenites crassimurus_ Singh & Misra 1991b: 214, pl 4, figs 3-4, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

_Jacobipollenites distinctus_ Singh & Misra 1991b: 213-214, pl 4, figs 1-2, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 56, pl 1, fig 10, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Ramanujam et al. 1999: 35, pl 2, figs 33, 40, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu.


_Jacobipollenites magniporus_ Singh & Misra 1991b: 213, pl 4, figs 5-6, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

_Jacobipollenites ramanujamii_ Samant 2000: 104, pl 3, fig 1, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

_Jacobipollenites sp._ Rao & Patnaik 2001: 277, pl 2, fig 6, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

_Jandufouria_ Germeraad et al., PTYCHOPOLYPORINES.


_Juglanspollenites_ Raatz, PERIPORITI.
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KAPURDIPOLLENITES Tripathi, SPHAEROZONISULCATES.

Kapurdipollenites baculatus Tripathi 1994: 62, pl 2, figs 5-7, EARLY PALAEOGENE, Well MK-332 (Depth 420 m from ground level), Kapurdi, Barmer District, Rajasthan; Tripathi 1995: 47, pl 1, fig 13, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Tripathi et al. 2003: 91, LATE PALAEOCENE (Akli Formation), Barmer Basin, Rajasthan.

Kapurdipollenites gemmatus Tripathi 1994: 61-62, pl 1, figs 1-4, EARLY PALAEOGENE, Well MJ-4 (Depth 100 m from ground level), Jalipa, Barmer District, Rajasthan; Tripathi 1995: 47, pl 1, fig 11, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Tripathi et al. 2003: 91, LATE PALAEOCENE (Akli Formation), Barmer Basin, Rajasthan.

KATROLITES Venkatachala & Kar, HILATES.

Katrolites kutchensis Venkatachala & Kar. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Re-worked).

KERALAEPOLLIS Kar, ANGIOSPERMÆ.

Keralaepollis oculis Kar 1993b: 35, pl 1, figs 1-5, BURDIGALIAN (Ambalapuzha Formation), Papanasam, Varkala, Kerala.

KHARIAASPORITES Kar, APICULATI.


KIELMEYERAPOLLENITES Sah & Kar, TETRADITES.


KINDOPOLLIS Mathur & Jain, PYCHOPOLYPORINES.

Kindopollis cf. decoris Mathur & Chopra. Kumar & Takahashi 1991: 546-547, pl 18, fig 4, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 81, pl 44, fig 4, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

KLAUSIPOLLENITES Jansonius, DISACCITES.

Klausipollenites decipiens Jansonius. Kar 1990b: 236, 240, MIDDLE OLIGOCENE and EARLY MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam (Reworked);
Mandaokar 1991: 27, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Mandal et al. 1996: 80, LATE CRETACEOUS, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramri kawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland (Reworked).

**Klausipollenites schaubergeri** (Potonié & Klaus) Jansonius. Mandal et al. 2003: 100, 102, pl 3, fig 3, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**Klausipollenites sulcatus** Kar et al. 1990b: 232, 233, 236, 237, 240, EOCENE-EARLY MIOCENE (Disang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam (Reworked); Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked); Trivedi & Saxena 2000: 275, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.


**Klausipollenites sp.** Singh et al. 1991: 41, pl 2, fig 3, OLIGOCENE (Barail Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

**Klukisporites variegatus** Couper. Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road Section near Lumshnong, Jaintia Hills District, Meghalaya (Reworked).

**Klukisporites sp.** Singh et al. 1991: 42, pl 2, fig 6, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).


**Klukisporites sp.** Mandal et al. 2003: 104, pl 3, fig 6, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**Klukisporites sp.** Singh & Kar 2003: 219, pl 1, fig 4, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

**Lacrimapollis** Venkatala & Rawat, TRIPTYCHES.

**Lacrimapollis pilosus** Venkatala & Rawat. Ramanujam et al. 1991: 54, pl 1, figs 23-24, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala.

**Lacrimapollis subcircularis** Saluja et al. = **Discoidites subcircularis** (Saluja et al.) Kumar.

**Lacrimapollis sp.** Ramanujam et al. 1991: 3, pl 2, fig 14, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

**Lacrimapollis sp.** Ramanujam et al. 1992: 22, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.
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Ladakhipollenites Mathur & Jain, TRIPTYCHES.


Trifossapollenites constatus Dutta & Sah 1970: 27, pl 6, figs 21-23, PALAEOCENE (Cherra Formation), Meghalaya.

Ladakhipollenites prolatus (Baksi) Mandal & Rao 2001: 356.

Tricolopites prolatus Baksi 1962: 19, pl 4, fig 44, OLIGOCENE (Barail Group), Meghalaya.

Ladakhipollenites shortii (Baksi) Mandal & Rao 2001: 356.

Tricolopites shortii Baksi 1962: 19, pl 4, fig 45, MIOCENE (Surma Group), Meghalaya.

LAEVIGATOPOLYCOLPITES Kar & Bhattacharya = PSILASTEPHANOCOLPITES Leidelmeyer, POLYPTYCHES.

Laevigatopolypollenites rotatus Kar & Bhattacharya = Psilastephanocolpites rotatus (Kar & Bhattacharya) Samant & Phadtare.

LAEVIGATOSPORITES Ibrahim, LAEVIGATOMONOLETI.

Laevigatosporites cognatus Sah & Kar. Mandaokar 1991: 26, EARLY MIOCENE, north of Malbong Railway Station, North Cachar Hills District, Assam; Mandal et al. 1996: 78, pl 1, fig 6, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Samant & Phadtare 1997: 9, pl 1, fig 10, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat (wrongly spelt as Laevigatosporites cognatus); Saxena 2000c: 163, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Samant & Tapasi 2001: 126, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Laevigatosporites copiosus Saluja et al. Kumar & Takahashi 1991: 594, pl 4, fig 2, pl 8, fig 1, pl 13, fig 6, MIDDLE OLIGOCENE, EARLY and LATE MIOCENE (Jenam, Lower Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Saluja et al. 1991: 66, pl 1, fig 24, NEOGENE, Adamtila Well-A, Cachar District, Assam; Kumar 1994: 20, 38, 52, 85, 95, pl 2, fig 6, pl 6, fig 4, pl 12, fig 1, pl 24, fig 22, pl 25, fig 3, EARLY-MIDDLE OLIGOCENE and MIOCENEOPLIOCENE (Laisong, Jenam, Bhuban, Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam.

Laevigatosporites discordatus Pflug in Thomson & Pflug. Hait & Banerjee 1994: 115, pl 1, fig 1, EARLY and LATE MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl and around Champhai, Mizoram; Kumar 1994: 63, EARLY-MIDDLE MIOCENE (Bhutan Formation), Silchar-Haflong Road Section, Assam.

Laevigatosporites gracilis Wilson & Webster. Kumar & Takahashi 1991: 594, pl 2, fig 6, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 20-21, 38, 48, 85, 95, 100, pl 2, fig 1, pl 11, fig 1, pl 22, fig 8, pl 47, fig 6, OLIGOCENE and LATE MIOCENE-PLIOCENE (Laisong, Jenam, Renji, Bokobil, Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam; Mitra et al. 2000: 126, pl 1, fig 12, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya; Samant 2000: 114, pl 1, fig 4, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

Laevigatosporites lakiensis Sah & Kar. Kar 1990a: 176, pl 1, figs 12-14, pl 9, fig 130, MIOCENE (Surma and Tipam groups), Rokhia
Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 237, 239, LATE OLIGOCENE-EARLY MIOCENE (Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Saxena & Misra 1990: 264, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Kar & Bhattacharya 1992: 251, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Misra & Kapoor 1994: 152, pl 1, fig 1, PALAEOCENE-EARLY EOCENE (Subathu and Basal Dharmasala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh; Tripathi 1995: 47, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Samant & Phadtare 1997: 9-10, pl 1, fig 11, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat (wrongly spelt as Laevigatosporites lukiensis); Samant 2000: 114, pl 1, fig 3, EARLY EOCENE (Khar salia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Saxena 2000c: 163, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Saxena & Khare 2004: 73, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Laevigatosporites ovatus Wilson & Webster. Rao 1990: 246, pl 1, fig 8, EOCENE-EARLY MIOCENE, Arthungal Borehole, Kerala; Saxena & Misra 1990: 264, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra; Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 1, fig 10, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala (wrongly spelt as Laevigatosporites ovatus); Rao et al. 1993: 81, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Shanmukhappa & Koshal 1993: 202, LATE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Banerjee & Nandi 1994: 219, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolabs, Aizawl District, Mizoram; Halt & Banerjee 1994: 115, pl 1, fig 2, EARLY MIOCENE, near Suangpulawn village about 20 km northeast of Aizawl, Mizoram; Kumar 1994: 38, pl 11, fig 6, pl 13, figs 3, 5, pl 18, fig 10, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Rao & Rajendrana 1996: 66, pl 1, fig 13, MIOCENE, Cannanore District, Kerala; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmasala and Siwalik), Dharmasala and Nurpur areas, Kangra District, Himachal Pradesh.


Laevigatosporites potoniei Samant & Phadtare 1997: 10-11, pl 1, fig 12, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat (wrongly spelt as Laevigatosporites potoniei).

Laevigatosporites robustus Kumar & Takahashi 1991: 594-595, pl 14, fig 1, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 53, 73, pl 34, fig 9, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Laevigatosporites tertarius (Sah & Dutta) Saxena & Khare 2004: 73, 75, 77, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.
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Polypodiaceaesporites tertiarius Sah & Dutta. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 237, EOCENE-LATE OLIGOCENE (Disang, Laisong, Jenam and Renji formations), Silchar-Haflong Road Section, Assam; Saxena & Misra 1990: 264, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 2, fig 4, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1995: 17, 19, pl 1, figs 1, 38, 48, pl 2, figs 2-3, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tiruchirapalli District, Tamil Nadu.

Laevigatosporites variabilis Saxena & Khare 2004: 73, 77, pl 1, fig 7, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


Laevigatosporites spp. Kumar 1994: 38, 74, 95, 100, 206, pl 11, fig 9, pl 12, fig 6, pl 13, fig 1, pl 35, fig 5, MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Jenam, Bhuban, Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam.


Laevigatosporites sp. Samant 2000: 114, pl 1, fig 5, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.


LAHIRITES Bharadwaj, STRIATITI.

Lahirites raniganjensis Bharadwaj. Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam (Reworked).

Lahirites sp. Singh et al. 1991: 41, pl 2, fig 16, OLIGOCENE-EARLY MIOCENE (Barail and Surma Groups), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

LAKIAPOLLIS Venkatachala & Kar, PTYCHOTRIPORINES.

Lakiapollis assamicus Tripathi & Singh. Singh & Tripathi 1990: 330, pl 1, fig 18, 31, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Lakiapollis ovatus Venkatachala & Kar. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Rao 1990: 246, pl 2, fig 29, pl 3, fig 16, EOCENE-EARLY
MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Saxena & Misra 1990: 265, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra; Ramanujam et al. 1991: 54, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Saxena 1991: 369, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Kar & Bhattacharya 1992: 252, pl 1, fig 9, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Ramanujam et al. 1992: 22, fig 3L, EARLY MIOCENE (Muyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Ambwani 1993: 157, 161, PALAEOCENE-EARLY EOCENE, Seam Nos. 1 and 3, Rek mangari Coalfield, Garo Hills, Meghalaya; Rao et al. 1993: 82, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Kar et al. 1994: 187, pl 2, fig 20, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Samant 1994: 49, EARLY EOCENE (Bhavnagar lignite, Kharsalia Clay Formation), South Cambay Basin, Gujarat; Kumaran et al. 1995: 1025, fig 3L, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines, Kerala; Rao et al. 1995: 374, fig 17, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala; Rao 1995a: 327, EOCENE-EARLY MIOCENE, Kalarakod and Nirkunnam Boreholes, Alleppey District, Kerala; Saxena 1995a: 99, fig 48, MIOCENE (Muyanad Formation), Kundra Clay Mines, Quilon District, Kerala (Reworked); Kumar 1996: 112, pl 1, fig 24, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bhurach District, Gujarat; Mandal et al. 1996: 80, LATE PALAEOCENE-EARLY EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Rao 1996: 157, pl 1, fig 14, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendran 1996: 66, pl 1, fig 19, pl 3, fig 10, MIOCENE, Cannanore District, Kerala; Saxena et al. 1996: 21, pl 3, figs 7, 11, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Mandal 1997: 99, pl 2, fig 4, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Samant & Phadare 1997: 27, pl 5, figs 9-11, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Rao & Nair 1998: 52, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 181, pl 2, fig 20, LATE EOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE EOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 297, pl 2, fig 5, Oligocene (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Samant 2000: 114, pl 3, fig 12, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Saxena 2000c: 163, pl 2, fig 9, MIOCENE (Sindhudurg Formation), Mavili Mine at Redi, Sindhudurg District, Maharashtra; Srivastava & Bhattacharyya 2000: 375, pl 1, fig 3, EARLY TERTIARY, Kimin-Ziro Road Section, Lower Subansiri District, near Rilu village, West Siang District and Pasighat to Rengging Section, East Siang District, Arunachal Pradesh; Tripathi et al. 2000: 245, pl 2, fig 12, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Kumar et al. 2001: 244, Oligocene (Barail Group), Tinali Well-7, Upper Assam; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bhurach District, Gujarat; Mandaokar 2002b: 21, LATE PALAEOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Singh & Kar 2002: 214, pl 1, figs 8, 10, PALAEOCENE (Deccan Intertrappean Beds), 3 km northeast of Papiro village, Lalitpur District, Uttar Pradesh; Gupta et al. 2003: 211, pl 1, fig 4, PALAEOCENE-EOCENE, Ganga Basin; Mandal et al. 2003: 104, pl 1, fig 2, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Singh & Kar 2003: 219, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papiro, Lalitpur District, Uttar Pradesh;
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Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam; Rao 2004: 125, MIOCENE (Sindhudurg Formation), Kalviwadi, Sindhudurg District, Maharashtra; Saxena & Khare 2004: 74, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Lakiapollis ratnagiriensis** Rao 2004: 125, 132, pl 1, figs 2-4, MIOCENE (Sindhudurg Formation), Kalviwadi, Sindhudurg District, Maharashtra.

**Lakiapollis sp.** Saxena & Misra 1990: 265, pl 1, fig 13, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra.

**Lakiapollis sp.** Ramanujam et al. 1991: 3, pl 3, fig 15, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

**Lakiapollis sp.** Singh et al. 1992: 56, pl 1, fig 12, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**Lakiapollis sp.** Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.

**LANAGIOPOLLIS** Morley, PTYCHOTRIPORINES.


**Lanagiopollis cambayensis** Kumar 1996: 114, pl 1, figs 21-22, pl 2, figs 11-12, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Lanagiopollis emarginatus** Morley. Phadtare & Thakur 1990: 287, pl 2, figs 5-6, EARLY-MIDDLE EOCENE (Rajpardi lignite), Gujarat; Tripathi et al. 2000: 245, pl 1, fig 1, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

**Lanagiopollis eocenicus** Mandal & Kumar 2000: 203, pl 2, figs 7-8, MIO-PLIOCENE (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam.

**Lanagiopollis meghalayaensis** Tripathi et al. 2000: 245, pl 1, figs 2-3, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.


**Lanagiopollis nanggulaensis** Morley. Tripathi et al. 2000: 245, pl 1, fig 8, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

**Lanagiopollis regularis** Morley. Kumar 1996: 112, pl 1, figs 13-14, 27, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Mandal 1997: 99, pl 1, fig 18, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Kumar et al. 2001: 245, fig 6.12, MIO-PLIOCENE (Namsang Formation), Rajpardi, Bharuch District, Gujarat; Mandal & Vijaya 2004: 497, fig 4G, LATE OLIGOCENE-EARLY MIOCENE, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

**Lanagiopollis reitsmae** Phadtare & Thakur 1990: 289, pl 3, figs 6-8, EARLY-MIDDLE EOCENE (Rajpardi lignite), Gujarat; Mandal & Vijaya 2004: 497, EARLY EOCENE (Tura Formation), Rajpardi, Bharuch District, Gujarat; Tripathi et al. 2000: 245, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.
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**Lanagiopollis rugulatus** Phadtare & Thakur 1990: 289-290, pl 4, figs 1-5. EARLY-MIDDLE EOCENE (Rajpardi lignite), Gujarat; Samant 2000: 114, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

**Lanagiopollis ruguloreticulatus** Phadtare & Thakur 1990: 287, 289, pl 3, figs 1-5. EARLY- MIDDLE EOCENE (Rajpardi lignite), Gujarat.

**Lanagiopollis ruguloverrucatus** Morley, Kumar 1996: 112, pl 1, figs 25-26, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Lanagiopollis subglobosus** Tripathi et al. 2000: 246, pl 1, figs 4-5, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

**Lanagiopollis tetracolporatus** Kumar 1996: 114, 116, pl 1, fig 12, pl 2, fig 16, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Lanagiopollis** Singh et al. 1992: 58, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**Lanagiopollis sp.** Kumar 1996: 116, pl 1, figs 25-26, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**LARICOIDITES** Potonié et al. ex Potonié, PSILONAPITI.

**Laricoidites indicus** Singh et al. = Araucariacites singhii Saxena.

**Laricoidites robustus** Ambwani 1993: 158, fig 5G, PALÆOCENE-EARLY EOCENE, Rekmangiri Coalfield, Garo Hills, Meghalaya;


**Laricoidites sp.** Singh & Tripathi 1990: 329, MIOCENE (Siwalik sediments), Arunachal Pradesh.

**Laricoidites sp.** Mandaokar 2004: 146, LATE EOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

**LEIOTRILETES** Naumova ex Ishchenko, LAEVIGAT.


**Leiotrilites eocenicus** (Dutta & Sah) Kumar & Takahashi 1991: 595-596, pl 3, fig 7, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

**Lygodiumsporites eocenicus** Dutta & Sah. Mandal 1990: 325, PALÆOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh & Tripathi 1990: 329, pl 1, fig 4, MIOCENE (Siwalik sediments), Arunachal Pradesh; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 21, pl 2, figs 1, 4, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Misra & Kapoor 1994: 159, PALÆOCENE-EARLY EOCENE (Subathu and Basal Dharmsala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh; Sarkar et al. 1994: 201, pl
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2, fig 16, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Rao 1995a: 327, pl 1, fig 12, EOCENE-EARLY MIOCENE, Nirkunnam Borehole, Alleppey District, Kerala; Tripathi 1995: 46, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Rao & Rajendran 1996: 65, pl 1, fig 6, MIOCENE, Cannanore District, Kerala; Saxena et al. 1996: 21, pl 1, fig 14, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Mandaokar 2000b: 180, pl 2, fig 35, LATE Oligocene (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao 2000: 295, Oligocene (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Tripathi et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.


Leiotriletes virkii Tiwari 1965: 170, pl 1, figs 2-3, Permian (Barakar Stage), Borehole G 214, Korba Coalfield, Madhya Pradesh.

Leiotriletes virkii Tiwari (non Biswas 1962) = Leiotriletes tiwarii Saxena.

Leiotriletes, Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

LEPTOLEPIDITES Couper, APICULATI.


Leptolepidites verrucatus Couper. Sarkar et al. 1994: 201, pl 2, fig 2, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Mandal 1997: 99, pl 1, fig 6, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

Leptolepidites sp. Saxena & Misra 1990: 264, pl 1, fig 3, NEOTECTIC (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra.

Leptolepidites sp. Kumar 1994: 77, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Leptolepidites sp. Sarkar et al. 1994: 201, pl 2, fig 3, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.


LIGULIFLORAEDITES Kar, PTYCHOTRIPORINES.


LILIACIDITES Couper, RETECTINES.

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Liliacidites ellipticus Venkatachala & Kar. Kumar 1994: 69, pl 37, fig 11, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Liliacidites cf. ellipticus Venkatachala & Kar. Kumar & Takahashi 1991: 547, pl 15, fig 6, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Saxena 2000c: 163, pl 2, fig 10, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

Liliacidites giganticus Singh. Saxena & Bhattacharyya 1990: 112, pl 2, figs 2-3, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Manjhi Khad Section near Dharmsala, Kangra District, Himachal Pradesh; Saxena et al. 1996: 21, pl 2, fig 8, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.


Liliacidites kutchensis Saxena = Matanomadhiasulcites kutchensis (Saxena) Kar.


Liliacidites magnus Ramanujam (non Jain et al. 1973) = Liliacidites ramanujamii Saxena.

Liliacidites major Singh = Matanomadhiasulcites major (Singh) Saxena & Khare.

cf. Liliacidites major Singh. Kumar & Takahashi 1991: 547-548, pl 9, fig 9(cf.), pl 15, fig 4, MIDDLE-LATE MIOCENE (Middle and Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 69, pl 38, fig 8, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Saxena 2000c: 163, pl 2, fig 10, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

Liliacidites cf. microreticulatus Dutta & Sah. Kumar & Takahashi 1991: 547-548, pl 9, fig 9(cf.), pl 15, fig 4, MIDDLE-LATE MIOCENE (Middle and Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 69, pl 38, fig 8, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Saxena 2000c: 163, pl 2, fig 10, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.


Liliacidites perforatus Pocknall. Sarkar et al. 1994: 201, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

Liliacidites pilosus Venkatachala & Rawat. Kumar & Takahashi 1991: 548, pl 1, fig 18, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 17,

Liliacidites magnus Ramanujam 1987 (non Jain et al. 1973): 29, pl 1, fig 19, MIOCENE (Warkalli Beds), Kerala.


Liliacidites variabilis Mathur & Chopra. Kumar 1994: 81, 92, pl 46, fig 7, LATE MIOCENE-PLIOCENE (Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam; Gupta et al. 2003: 213, pl 1, fig 11, PALAEOCENE-EOCENE, Ganga Basin.

Liliacidites cf. variabilis Mathur & Chopra. Kumar & Takahashi 1991: 548-549, pl 18, figs 17-18, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Liliacidites variegatus Couper. Kumar & Takahashi 1991: 549, pl 6, fig 4, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 44, pl 22, fig 11, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Liliacidites sp. Saxena & Bhattacharyya 1990: 112, pl 2, fig 8, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Manjhi Khad Section near Dharmsala, Kangra District, Himachal Pradesh.

Liliacidites sp. in Kar & Kumar. Singh 1990: 219, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

Liliacidites sp. Singh & Tripathi 1990: 330, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Liliacidites sp. 1. Singh & Tripathi 1990: 326, pl 1, fig 19, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Liliacidites sp. 2. Singh & Tripathi 1990: 326, pl 1, fig 20, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Liliacidites sp. Kumar & Takahashi 1991: 549-550, pl 11, fig 5, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Liliacidites sp. Kar & Bhattacharya 1992: 257, pl 2, fig 18, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.


Liliacidites sp. A. Kumar 1994: 44, 58, pl 22, fig 10, pl 32, fig 17, LATE OLIGOCENE and EARLY MIDDLE MIOCENE (Renji and Bhuban formations), Silchar-Haflong Road Section, Assam.

Liliacidites spp. Kumar 1994: 29, 50, 59, 81, 92, 98, pl 15, fig 3, pl 16, figs 3, 6, 9, pl 24, fig 2, pl 33, fig 21, MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Jenam, Bhuban, Bokabil Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam.

Liliacidites sp. Kumar 1994: 29, pl 16, figs 9, 14, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

Liliacidites sp. Saxena & Bhattacharyya 1990: 112, pl 2, fig 8, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Manjhi Khad Section near Dharmsala, Kangra District, Himachal Pradesh.


Liliacidites sp. Sarkar et al. 1994: 201, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.
Liliacidites sp. Singh & Sarkar 1994: 50, pl 1, fig 16, EARLY MIocene (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.

Liliacidites sp. Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.


Liliacidites sp. Srivastava & Bhattacharyya 2000: 375, pl 1, fig 2, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

Liliacidites sp. Rao & Patnaik 2001: 277, pl 3, fig 2, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.


LIMITISPORITES Leschik, DISACCIMONO-LETI.

Limitisporites diversus Lele & Karim. Kar 1990a: 180, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked).

Limitisporites plicatus Bose & Kar. Kar 1990b: 240, EARLY MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

LIRIODENDROIPOLLIS Krutzsch, MONOPTYCHES.


LOBATISPORITES Tiwari & Moiz, APICULATI.


LONGAPERTITES van Hoeken-Klinkenberg, RETECTINES.

Longapertites hammenii Rao & Ramanujam. Rao 1990: 246, pl 1, fig 4, EOCENE-EARLY MIocene, Arthungal Borehole, Alleppey District, Kerala; Ramanujam et al. 1991: 53, EARLY MIocene, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Ramanujam et al. 1998c: 55, fig 6, MIocene, Borwell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh; Ramanujam et al. 1999: 35, pl 1, fig 24, MIocene, South Arcot and Thanjavur districts, Tamil Nadu; Samant 2000: 114, pl 3, fig 5, EARLY EOCENE (Kharaslia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.


Longapertites klinkenbergi Rao & Ramanujam. Singh & Tripathi 1990: 329, MIocene (Siwalik sediments), Arunachal Pradesh; Ramanujam et al. 1992: 21, EARLY MIocene (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 81, pl 1, fig 12, EARLY MIocene, Thakkazi Borewell, Alleppey District, Kerala; Rao et al. 1995: 374, EARLY MIocene, Borewell at Kulasekharamangalam, Kottayam District, Kerala; Ramanujam et al. 1999: 35, pl 1, fig 23, MIocene, South Arcot and Thanjavur districts, Tamil Nadu.

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25, PALAEOCENE-EARLY EOCENE (Subathu and Basal Dharmsala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh.


**Longapertites ornatus** Phadtare & Kulkarni. Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

**Longapertites ovalis** Mathur & Jain. Saxena et al. 1996: 21, pl 3, fig 8, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.


**Longapertites retipilatus** Kar. Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Mandal et al. 1996: 80, LATE PALAEOCENE-EARLY EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Samant 2000: 114, pl 3, fig 7, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Kumar et al. 2001: 244, 245, fig 6.8, OLIGOCENE and EARLY-MIDDLE MIOCENE (Barail Group and Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam.


**Longapertites spp.** Shanmukhappa & Koshal 1993: 195, 201, EARLY-MIDDLE EOCENE (Cambay Shale and Ankleshwar formations), Gandhar area, Broach Depression, Cambay Basin, Gujarat.

**Longapertites sp.** Banerjee & Nandi 1994: 219, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram.


**Longapertites sp.** Kumaran et al. 1995: 1025, fig 4r, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines, Kerala.

**Longapertites sp.** Samant & Phadtare 1997: 30, pl 5, figs 15-16, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.


Lophotriletes Naumova ex Ishchenko, APICULATI.


Lophotriletes. Srivastava & Bhattacharaya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

Loranthipites Rao & Ramanujam, TRIPTYCHES.

Loranthipites sp. Singh & Tripathi 1990: 330, pl 1, fig 11, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Lueckisporites Potonié & Klaus, STRIATITI.

Lueckisporites virkii Potonié & Klaus. Kar 1990a: 181, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Bamarama Borehole No. 2, Tripura.

Lueckisporites sp. Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Lueckisporites sp. Kar 1990b: 236, 237, 239, MIDDLE-LATE OLIGOCENE and EARLY MIOCENE (Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam (Reworked).

Lueckisporites sp. Mandaokar 1996b: 41, LATE OOLIGOCENE (Tikak Parbat Formation), Dillijypeore Colliery, Dilli-Jypeore Coalfields, Dibrugarh District, Assam.

Lueckisporites sp. Singh & Tripathi 1990: 329, pl 1, fig 3, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Lueckisporites sp. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Bamarama Borehole No. 2, Tripura.


Lueckisporites sp. Kumar et al. 2004: 158, 160, pl 1, fig 1, NEOGENE and PLEISTOCENE, Site 218, Deep Sea Drilling Project Leg 22, Bengal Fan, Indian Ocean (Reworked).

Lycopodiacidites Couper, MURORNATI.

Lycopodiacidites asperatus Dettmann. Kumar et al. 2004: 158, 160, pl 1, fig 1, NEOGENE and PLEISTOCENE, Site 218, Deep Sea Drilling Project Leg 22, Bengal Fan, Indian Ocean (Reworked).

Lycopodiacidites cerebrus Kar & Kumar. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Bamarama Borehole No. 2, Tripura; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dillijypeore Colliery, Dilli-Jypeore Coalfields, Dibrugarh District, Assam.

Lycopodiacidites dextrus Kar & Kumar. Singh & Tripathi 1990: 329, pl 1, fig 3, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Lycopodiacidites sp. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Bamarama Borehole No. 2, Tripura.

Lycopodiacidites sp. Kar 1990b: 236, 237, 239, MIDDLE-LATE OLIGOCENE and EARLY MIOCENE (Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam.

Lycopodiacidites spp. Trivedi 1991: 67, pl 1, fig 5, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road, Jaintia Hills District, Meghalaya (Reworked).

Lundanceispora Balme, CINGULATI.

Lundanceispora sp. Trivedi 1991: 67, pl 1, fig 4, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road, Jaintia Hills District, Meghalaya (Reworked).

Lundanceispora sp. Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Lundanceispora sp. Singh & Tripathi 1990: 330, pl 1, fig 11, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Lundanceispora virkii Potonié & Klaus. Kar 1990a: 181, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Bamarama Borehole No. 2, Tripura.

Lundanceispora sp. Singh & Tripathi 1990: 329, pl 1, fig 3, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Lundanceispora spp. Trivedi 1991: 67, pl 1, fig 5, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road, Jaintia Hills District, Meghalaya (Reworked).
Lycopodiacidites sp. Singh & Tripathi 1990: 329, pl 1, fig 2, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Lycopodiacidites sp. Singh et al. 1991: 42, pl 2, fig 10, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).


LYCOPODIUMSPORITES Thiergart ex Delcourt & Sprumont, MURORNATI.


Lycopodiumsporites bellus Sah & Kar. Saxena & Rao 1996: 46, pl 1, fig 2, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.


Lycopodiumsporites elegans Salujha et al. Salujha et al. 1991: 65, pl 1, fig 9, NEOGENE, Adamtila Well-A, Cachar District, Assam.

Lycopodiumsporites ecenicus Venkatachala & Rawat. Kumar 1994: 38, pl 9, fig 7, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

Lycopodiumsporites globatus Kar. Kar 1990a: 175, pl 3, figs 53-54, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 233, 236, 237, 239, EARLY OLIGOCENE-EARLY MIOCENE (Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 9, 10, pl 2, fig 7, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Singh & Sarkar 1994: 50, pl 1, fig 15, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002b: 21, pl 2, fig 8, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 187, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chiimtuipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Lycopodiumsporites nadahensis Rao & Patnaik 2001: 274, pl 1, figs 1-2, LATE PIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

Lycopodiumsporites palaeoeniclus Dutta & Sah. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar
1990b: 233, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 218, pl 1, fig 9, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Ambwani 1993: 160, PALAEOCENE-EARLY EOCENE, Seam Nos. 1, 2 and 3, Rekmangiri Coalfield, Garo Hills, Meghalaya; Kumar 1994: 38, pl 7, fig 7, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Tripathi 1995: 46, PALAEOCENE-EARLY EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Saxena et al. 1996: 21, pl 1, figs 10-11, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 borizons, near Kapurdi, Barmer District, Rajasthan; Kar & Sharma 2001: 128, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmasala and Siwalik), Dharmasala and Nurpur areas, Kangra District, Himachal Pradesh; Tripathi et al. 2003: 91, LATE PALAEOCENE (Akti Formation), Barmer Basin, Rajasthan; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

**Lycopodiumsporites parvireticulatus** Sah & Dutta. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Ambwani 1993: 157, 159, PALAEOCENE, Seam Nos. 1 and 2, Rekmangiri Coalfield, Garo Hills, Meghalaya; Sarkar et al. 1994: 201, pl 1, fig 11, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand; Saxena et al. 1996: 21, pl 1, figs 9, 13, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Mandaokar 2000b: 183, pl 1, fig 3, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Kar & Sharma 2001: 128, pl 1, fig 7, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

**Lycopodiumsporites pattamorensis** Khanna & Singh. Singh et al. 2003: 204, pl 2, fig 13, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Kota areas, Solan District, Himachal Pradesh.

**Lycopodiumsporites speciosus** Dutta & Sah. Kar 1990a: 175, pl 3, figs 47-48, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 219, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Ambwani 1993: 160, PALAEOCENE, Seam No. 1, Rekmangiri Coalfield, Garo Hills, Meghalaya; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Mandal et al. 1996: 80, LATE PALAEOCENE-EARLY EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Saxena et al. 1996: 21, pl 1, figs 6, 8, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Sharma 2000: 52, pl 1, fig 6, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan; Kar & Sharma 2001: 128, pl 1, fig 5, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmasala and Siwalik), Dharmasala and Nurpur areas, Kangra District, Himachal Pradesh; Singh et al. 2003: 204, pl 2, fig 14, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Kota areas, Solan District, Himachal Pradesh; Chakraborty 2004: 115, pl 1, figs 5-6, LATE PALAEOCENE (Lakadong Sand-


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_Lycopodiumsporites sp._ Kar 1990a: 198, pl 9, fig 134, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

_Lycopodiumsporites sp._ Kar 1990b: 233, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

_Lycopodiumsporites sp._ Singh & Tripathi 1990: 329, pl 1, fig 1, MIOCENE (Siwalik sediments), Arunachal Pradesh.


_Lycopodiumsporites sp._ Shanmukhappa & Koshal 1993: 202, LATE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin.

_Lycopodiumsporites sp._ Haik & Banerjee 1994: 115, pl 1, fig 3, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram.


_Lycopodiumsporites sp._ Sarkar et al. 1994: 201, pl 1, fig 4, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand.


_Lycopodiumsporites sp._ Rao 1995a: 326, pl 1, figs 5-6, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala.


_Lycopodiumsporites sp._ Rao et al. 2001: 274, pl 2, figs 1-2, LATE PIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

_Lycopodiumsporites sp._ Rao & Patnaik 2001: 274, pl 3, fig 1, LATE PIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

_Lycopodiumsporites sp._ Rao & Patnaik 2001: 274, pl 3, fig 1, LATE PIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.
**Lycopodiumsporites sp.** Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**LYGODIUMSPORITES** Potonié et al. ex Potonié, LAEVIGATI.


**Lycopodiumsporites barogensis** Khanna & Singh. Singh et al. 2003: 204, pl 2, fig 12, YPRESIAN-POST LUTETIAtAN (Subathu Formation), around Dharampur and Koti areas, Solan District, Himachal Pradesh.

**Lycopodiumsporites donaensis** Rao & Singh. Kumar 1994: 38, pl 10, fig 9, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

**Lycopodiumsporites enigmatus** Sarkar & Singh. Singh et al. 2003: 204, pl 2, figs 10-11, YPRESIAN-POST LUTETIATAN (Subathu Formation), around Dharampur and Koti areas, Solan District, Himachal Pradesh.

**Lycopodiumsporites eocenicus** Dutta & Sah = Leiotriteles eocenicus (Dutta & Sah) Kumar & Takahashi.

**Lycopodiumsporites lakiensis** Sah & Kar. Kar 1990a: 175, pl 1, figs 8-11, pl 9, fig 124, MIocene (Surma and Tipam groups), Rohkia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 234, 237, 239, EOCENE-EARLY MIocene (Disang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjath, Khadi Hills, Meghalaya; Saxena & Misra 1990: 264, pl 3, fig 1, NEOGENE (Ratnagiri Beds), Amberiwardi Section, Sindhudurg District, Maharashtra; Singh 1990: 218, PALAEOCENE (Tura Formation), Langrin Coalfield, Khadi Hills, Meghalaya; Kar & Bhattacharya 1992: 251, pl 1, figs 2, 4, EARLY EOCENE, Gujra Dam Section and Atri lignite, Kutch District, Gujarat; Mandal 1993: 139, pl 2, fig 27, LATE OLIGOCENE (Tikak Parbat Formation), Daneri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 38, pl 7, fig 10, pl 8, fig 4, pl 10, fig 12, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitymbai, Jaintia Hills District, Meghalaya; Rao 1995a: 327, pl 1, fig 1, EOCENE-EARLY MIocene, Kalarakod Borehole, Alleppey District, Kerala; Tripathi 1995: 46, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Kumar 1996: 112, pl 1, fig 1, EARLY EOCENE (Tarkeswar Formation), Rajpardi, Bharuch District, Gujarat; Rao 1996: 156, pl 1, fig 1, EARLY MIocene, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendran 1996: 65, MIocene, Cannanore District, Kerala; Saxena et al. 1996: 21, PALAEOCENE (Pura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Saxena & Rao 1996: 46, pl 1, fig 7, EARLY MIocene (Bolgatangiri Formation), Adugiri-Purakhasia Road near Bolgamgiri, West Garo Hills District, Meghalaya; Mandal 1997: 99, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Samant & Phadare 1997: 11, pl 1, fig 13, EARLY EOCENE (Tarkeswar Formation), Rajpardi, Cambay Basin, Gujarat; Sarkar 1997: 109, EOCENE (Subathu Formation), 20 km southeast of Bilaspur on Shimla-Bilaspur Highway, Bilaspur District, Himachal Pradesh; Tripathi 1997: 170, EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Rao & Nair 1998: 52, MIocene, Kannanellur-Kundra Road area, Quilon District, Kerala; Acharya 2000: 22, EARLY EOCENE, Borehole No. MI 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Mandaokar 2000b: 180, pl 1, fig 6, LATE OLIGOCENE (Tikak Parbat Forma-
Lygodiumsporites pachyexinus

Lygodiumsporites padappakkarensis

Lygodiumsporites ygodiumsporites padappakkarensis

Lygodiumsporites ygodiumsporites pachyexinus

Lygodiumsporites ygodiumsporites padappakkarensis

Lygodiumsporites ygodiumsporites ygodiumsporites padappakkarensis

Lygodiumsporites sp.  Kar 1990b: 237, LATE OLLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Lygodiumsporites sp.  Mandal et al. 1996: 78, pl 1, fig 9, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands.

Lygodiumsporites sp.  Sarkar & Prasad 2000a: 171, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), Koshala Nala Section near Koti, Shimla Hills, Solan District, Himachal Pradesh.

MACULOSPORITES Venkatachala & Rawat, TRIPORINES.


MAGNAMONOCOLPITES Kar, MONOPTYCHES.

Magnetomonocolpites miocenicus  Kar. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 236, MIDDLE OLLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuanan Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 181, LATE OLLIGOCENE (Tikak Parbat Formation), Jyepore Colliery, Dilli-Jyepore Coalfields, Dibrughar District, Assam; Mandaokar 2002b: 21, LATE OLLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.

Magnamonocolpites plicatus  Kar. Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 1, fig 13, LATE OLLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrughar District, Assam; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam.

MAGNASTRIATITES Germeraad et al., MUORNATI.

Magnastriatites venustus  (Salujha et al.) Salujha et al. Salujha et al. 1991: 65, pl 1, fig 13, NEOGENE, Adamtila Well-A, Cachar District, Assam.


MALAYAESPORAP Trivedi & al., MUORNATI.

Malayaeaspora costata  Trivedi et al. Kar 1990a: 175, pl 3, fig 55, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 233, 239, LATE OLLIGOCENE and EARLY MIOCENE (Laisong and Bhuan formations), Silchar-Haflong Road Section, Assam.

Malayaeaspora sp.  Mandal 1997: 99, pl 1, fig 5, LATE EOCENE (Barail Group), Marian-Mokokchung Road, Mokokchung District, Nagaland.
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MALVACEARPOLLIS


Malvacearpollis rudis Kar = Palaeomalvacearpollis rudis (Kar) Kar.

Malvacearpollis sp. Saxena & Bhattacharyya 1990: 112, pl 2, fig 5, OLIGOCENE (Ratnagiri Beds), Amberi Wadi Section, Sindhudurg District, Maharashtra.

Malvacearpollis sp. Saxena & Misra 1990: 265, pl 2, fig 5, NEogene (Ratnagiri Beds), Amberi Wadi Section, Sindhudurg District, Maharashtra.

Malvacearpollis sp. Hafl & Banerjee 1994: 117, pl 3, fig 50, EARLY and LATE MIOCENE, near Suangpuklawn village about 20 km northeast of Aizawl and around Champhai, Mizoram.

Malvacearpollis spp. Kumar 1994: 95, LATE MIOCENE-PLIOCENE (Tipam Formation), Silchar-Haflong Road Section, Assam.
Malvacearumpollis sp. A. Sarkar et al. 1994: 201, pl 2, fig 18, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

Malvacearumpollis sp. B. Sarkar et al. 1994: 202, pl 2, fig 12, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

Malvacearumpollis sp. Saxena & Rao 1996: 53, pl 2, fig 10, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.


cf. Malvacearumpollis. Kumar 1994: 81, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

MALVACIPOLLIS Harris, POLYPORINES.

Malvacipollis problematicus Khan. Ramanujam et al. 1989: 28-29, pl 1, fig 9, MIOCENE, subsurface sediments of eastern coast of southern India.

Malvacipollis sp. Rao & Rajendran 1996: 74, pl 3, fig 16, MIOCENE (Quilon Formation), Meenkunnu Phase I, Cannanore District, Kerala.

MANSARPOLLENITES in Misra & Kapoor. Nomen nudum.


MARGINIPOLLIS Clarke & Frederiksen, Pycnotriporines.

Marginipollis grandis Salujha et al. = Marginipollis kutchensis (Venkatachala & Kar) Rawat et al.

Marginipollis kutchensis (Venkatachala & Kar) Rawat et al. Kumar & Takahashi 1991: 550, pl 6, figs 8-9, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Ramanujam et al. 1991: 54, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 2, fig 8, NEOGENE, Mynagappalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 21, fig 2L, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Shanmukhappa & Koshal 1993: 195, EARLY EOCENE (Cambay Shale Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Banerjee & Nandi 1994: 219, pl 1, fig 20, EARLY-MIDDLE MIOCENE (Middle Bhanuban Formation), near Kolasib, Aizawl District, Mizoram; Mandal 1997: 100, pl 2, fig 7, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Samant & Phadtare 1997: 30, pl 5, fig 17, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Rao & Nair 1998: 53, pl 1, figs 3-4, MIOCENE, Kannahellur-Kundra Road area, Quilon District, Kerala; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Mandaokar 2000b: 183, pl 2, figs 9, 16, 22, 57, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Samant 2000: 114, pl 3, fig 11, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Kumar et al. 2001: 244, 245, fig 5.11, OLIGOCENE and MIO-PLOICENE (Barail Group and Namsang Formation), Tinali Well-7, Upper Assam.


cf. Marginitopollis kutchensis (Venkatachala & Kar) Rawat et al. 1994: 59, pl 24, fig 2, pl 33, fig 21, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

?Marginitopollis sp. Kumar 1994: 45, pl 23, fig 16, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam;


Margocolporites Ramanujam ex Srivastava, PROLATI.

Margocolporites complexum Ramanujam. Saxena 1995: 99, fig 36, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala; Saxena 2000c: 163, pl 1, figs 7, 21, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra.

Margocolporites dubius Ramanujam. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar & Bhattacharya 1992: 252, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Saxena 1995: 99, fig 16, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala; Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Margocolporites eocenicus Samant & Phadtare 1997: 31, pl 6, figs 1-5, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.


Retitricolporites ghoshii Ramanujam. Ramanujam et al. 1991: 3, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

Margocolporites granimuratus Saxena & Khare 2004: 74, 83, pl 1, fig 22, LATE PALAEogene-MIDDLE EOCENE, Jayamkondachalapuram Well 12, Tiruchirapalli District, Tamil Nadu.


Margocolporites planocolporatus Ambwani 1993: 155, fig 5A, PALAEogene, Seam Nos. 1 and 2, Rekmangiri Coalfield, Garo Hills, Meghalaya.


Margocolporites sitheleyi Ramanujam. Kumar & Takahashi 1991: 551, pl 6, fig 1, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 45, pl 23, fig 11, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kumaran et al. 1995: 1025, fig 4p, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines,


**Margocolporites venkatachalae** Samant & Phadtare 1997: 31, pl 6, figs 11-12, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 4, fig 1, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

**Margocolporites sp.** Singh et al. 1992: 57, pl 2, fig 3, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**Margocolporites sp.** Hait & Banerjee 1994: 117, pl 2, fig 31, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram.

**Margocolporites sp.** Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitymbai, Jaintia Hills District, Meghalaya.
**Margocolporites spp.** Samant 1994: 49, EARLY EOCENE (Bhavnagar lignite, Kharsalia Clay Formation), South Cambay Basin, Gujarat.

**Margocolporites spp.** Mehrotra et al. 2000: 153, MIDDLE-LATE EOCENE (Sylhet and Kopili formations), Upper Assam.

**Margocolporites sp.** Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.

**Margocolporites sp.** Trivedi & Saxena 2000: 275, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.

**MATANOMADHIASULCITES** Kar, MONOPTYCHES.


**Matanomadhiasulcites kutchensis** (Saxena) Kar. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 219, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Kar & Bhattacharya 1992: 251, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Singh et al. 1992: 56, pl 1, fig 6, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Ambwani 1993: 160, PALAEOCENE-EARLY EOCENE, Seam Nos. 1, 2 and 3, Rekmangiri Coalfield, Garo Hills, Meghalaya; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Tripathi 1995: 47, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Samant & Phadtare 1997: 33, pl 6, fig 14, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Sharma 2000: 52, pl 1, figs 9-10, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan; Kar & Sharma 2001: 129, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.


**Matanomadhiasulcites major** (Singh) Saxena & Khare 2004: 74, 78, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Lilliciades major** Singh. Saxena & Bhattacharyya 1990: 112, pl 1, fig 15, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Manjhi Khad Section near Dharmsala, Kangra District, Himachal Pradesh; Kumar 1994: 28, 29, pl 14, fig 7, pl 15, fig 13, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Tripathi 1995: 47, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.


**Lilliciades major** Singh. Saxena & Bhattacharyya 1990: 112, pl 1, fig 15, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Manjhi Khad Section near Dharmsala, Kangra District, Himachal Pradesh; Kumar 1994: 28, 29, pl 14, fig 7, pl 15, fig 13, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Tripathi 1995: 47, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.


Matanomadhasulcites sp. Gupta et al. 2003: 211, pl 1, fig 1, PALAEOCENE-EOCENE, Ganga Basin.

Matanomadhasulcites sp. Singh & Kar 2003: 219, pl 2, figs 8-9, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

MEGAPOROITES Krutzsch, MONOPORINES.

Megaporoites sp. Kumar & Takahashi 1991: 551-552, pl 8, fig 12, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam.

Megaporoites sp. Kumar 1994: 59, pl 24, fig 9, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

MEGARETIORITES Kar & Sharma, TRIPORINES.


MELIAPOLLIS Sah & Kar, PTYCHOPOLYPORINES.


Meliapollis melioides (Ramanujam) Sah & Kar, Kar & Bhattacharyya 1992: 252, EARLY EOCENE, Gwara Dam Section and Akri lignite, Kutch District, Gujarat.

Meliapollis minutus Singh. Singh 1990: 220, pl 2, fig 12, PALAEOCENE (Tura Formation), Langrin Coalfield, Khali Hills, Meghalaya.

Meliapollis navalei Sah & Kar. Kar 1990a: 177, pl 5, figs 76-78, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura;


Meliapollis raoi Sah & Kar. Hait & Banerjee 1994: 116, pl 2, fig 21, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram; Acharya 2000: 22, EARLY EOCENE, Borhole No: MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Rao 2000: 297, pl 1, fig 13, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Saxena & Sarkar 2000: 257, MID-
DLE EOCENE (Siju Formation), Simsang River Section near Siju, South Garo Hills District, Meghalaya; Saxena & Khare 2004: 74, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


**Meliapollis triangulus** Saxena. Rao 2000: 297, pl 1, fig 4, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

**Meliapollis sp.** Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**Meliapollis sp.** Singh & Tripathi 1990: 330, pl 1, figs 15, 24, MIOCENE (Siwalik sediments), Arunachal Pradesh.

**Meliapollis sp.** Singh et al. 1992: 56, pl 1, fig 15, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

cf. **Meliapollis sp.** Kumar 1994: 92, LATE MIOCENE PLIOCENE (Tipam Formation), Silchar-Haflong Road Section, Assam.


**Mesozoic reworked pollen.** Mandal 1997: 100, pl 1, fig 31, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

**MEYERIPOLLIS** Baksi & Venkatachala, PTYCHOTRIPORINES.


**Meyeripollis naharkotensis** Baksi & Venkatachala. Mandaokar 1993: 139, pl 1, figs 7, 11, 23, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 17, 29, 42, 46, 77, 81, 98, pl 4, figs 1, 4, pl 18, fig 15, pl 23, figs 2, 4, pl 44, figs 1-2, pl 50, fig 2, OLIGOCENE-PLIOCENE (Laisong, Jenam, Renji, Bhurban, Bokabil and Dupitila formations), Silchar-Haflong Road Section, Assam; Mandal et al. 1996: 81, pl 1, fig 13, OLIGOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 42, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Saxena & Rao 1996: 48, pl 2, fig 11, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandaokar 2000b: 181, pl 1, fig 13, LATE OLIGOCENE (Tikak Parbat Formation),
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Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Kumar et al. 2001: 244, fig 5.6, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Venkatachala et al. 2004: 170, pl 1, figs 1-13, LATE OLIGOCENE (Tikak Parbat Formation), Assam.

Meyeripollis triradiatus Kumar & Takahashi 1991: 552, pl 6, fig 7, text-fig 6, LATE OLIGOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 45, 98, pl 23, fig 1, LATE OLIGOCENE and LATE MIOCENE-PLIOCENE (Renji and Dupitila formations), Silchar-Haflong Road Section, Assam.


Meyeripollis sp. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Microbaculispora gondwanensis Bharadwaj. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Microbaculispora sp. Singh et al. 1991: 41-42, pl 1, fig 1, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

Microbaculispora sp. Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Microfoveolatispora Bharadwaj, MURORNAI.


Microfoveolatosporis Krutzsch, SCULPTATOMONOLETI.

Microfoveolatosporis sp. Kumar & Takahashi 1991: 596, pl 4, fig 1, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.


Minutitricolporites Bharadwaj, PTYCHOTRIPORINES.

Minutitricolporites minutus Kar. Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kar & Bhattacharyya 1992: 252, pl 2, figs 4, 7, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Mandal et al. 1996: 80, pl 1, fig 21, LATE PALAEOCENE-EARLY EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin; Mandal et al. 2003: 102, pl 1, fig 11, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

MOMIPITES Wodehouse, TRIPORINES.
Momipites inaequalis Anderson. Kumar & Takahashi 1991: 553, pl 18, fig 7, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 29, 69, 82, pl 19, fig 9, pl 38, fig 19, pl 44, fig 17, pl 46, fig 14, MIDDLE OLIGOCENE and MIOCENE (Jenam, Bhban and Bokabil formations), Silchar-Haflong Road Section, Assam.

Momipites sp. Kumar & Takahashi 1991: 553, pl 5, fig 14, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.


Monocolpites finely reticulate pollen grains, a group of. Kumaran et al. 1995: 1026, fig 4g, MIOCENE (Workalli Formation), Bharathi and Kundra Clay Mines, Kerala.

MONOCOLPOPITIES Biswas ex Baksi, MONOTYPCHES.

Monocolpitites spinosa Baksi. Mandal et al. 2003: 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (wrongly spelt as Monocolpites spinosus).

MONOCOLPOPOPOLLENITES Pflug & Thomson in Thomson & Pflug, MONOTYCHES.

Monocolpapolollenites communis (Sah & Dutta) Kumar & Takahashi 1991: 553-554, pl 15, fig 18, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 69, 82, pl 37, fig 12, MIOCENE (Bhban and Bokabil formations), Silchar-Haflong Road Section, Assam.

Palmepollenites communis Sah & Dutta. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Handique et al. 1992: 218, 219, EOCENE-OLIGOCENE (Kopili Formation and Barail Group), Moran Oilfield, Upper Assam; Banerjee & Nandi 1994: 219, pl 1, fig 11, EARLY-MIDDLE MIOCENE (Middle Bhban Formation), near Kolasib, Aizawl District, Mizoram; Kumar 1994: 31, pl 15, fig 12, pl 16, fig 8, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Mitra et al. 2000: 126, pl 1, fig 19, NEOCENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

Monocolpapol pollenites subtilis (Salujha et al.) Kumar & Takahashi 1991: 554, pl 2, fig 3, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Palmaepollenites subtilis Salujha et al. Salujha et al. 1991: 66, pl 1, fig 35, NEOCENE, Adamtila Well-A, Cachar District, Assam; Kumar 1994: 17, pl 4, figs 10, 19, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Kapoor et al. 2003: 182, OLIGOCENE-NEOCENE (Dharmsala and Siwalik), Dharmsala and NURPUR areas, Kangra District, Himachal Pradesh.

Monocolpapol pollenites sp. A. Kumar & Takahashi 1991: 554, pl 12, fig 9, MIDDLE MIOCENE (Middle Bhban Formation), Silchar-Haflong Road Section, Assam.

Monocolpapol pollenites sp. B. Kumar & Takahashi 1991: 555, pl 15, fig 10, MIDDLE MIOCENE (Middle Bhban Formation), Silchar-Haflong Road Section, Assam.

Monocolpapol pollenites sp. C. Kumar & Takahashi 1991: 555, pl 2, fig 13, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

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**Monocolpopollenites sp. A.** Kumar 1994: 59, pl 32, fig 6, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Monocolpopollenites sp. B.** Kumar 1994: 69, pl 38, fig 11, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**MONOCOLPOPOLLIS** in Misra & Kapoor. *Nomen nudum.*


**Monolete spores** Kumar 1994: 21, 41, 208, pl 2, fig 11, fig 7, fig 36, fig 7, EARLY-MIDDLE OLIGOCENE and EARLY-MIDDLE MIOCENE (Laisong, Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam (Reworked).

**Monolete spore type A.** Kumar 1994: 63, pl 29, fig 3, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**MONOLITES** Cookson ex Potonié, LAEVIGATOMONOLETI.

**Monolites ambergiadiensis** Saxena & Misra 1990: 266, pl 1, fig 6, NEOGENE (Ratnagiri Beds), Amberiwdi Section, Sindhudurg District, Maharashtra.

**Monolites major** Cookson ex Potonié. Shanmukhappa & Koshal 1993: 202, LATE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat.

**Monolites mawkmaensis** Sah & Dutta. Saxena & Misra 1990: 264, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra; Singh & Tripathi 1990: 329, MIOCENE (Siwalik sediments), Arunachal Pradesh; Tripathi 1995: 47, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, pl 2, figs 9, 13, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.

**Monolites ovatus** Sah. Saxena & Misra 1990: 264, NEOGENE (Ratnagiri Beds), Amberiwdi Section, Sindhudurg District, Maharashtra.

**Monolites sp.** Sarkar et al. 1994: 201, pl 2, fig 6, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand.

**MONOPOROPOLLENITES** Meyer, MONOPORINES.

**Monoporopollenites gramineoides** Meyer. Kar et al. 1994: 186, pl 1, fig 23, TERTIARY, subsurface sediments in Upper Assam; Sarkar et al. 1994: 202, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhitumtiupui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

**Monoporopollenites kasaulensis** Singh & Sarkar. Singh & Sarkar 1994: 50, pl 1, fig 17, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.

**Monoporopollenites sp.** Kar 1990a: 178, pl 5, fig 79, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**Monoporopollenites sp.** Hait & Banerjee 1994: 117, pl 2, fig 38, EARLY and LATE MIOCENE,
near Suangpuilawn village about 20 km north-east of Aizawl and around Champhai, Mizoram.

**Monoporopollenites sp.** Mandaokar 2000c: 43, pl 1, fig 3, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Chamlang District, Arunachal Pradesh.

**Monoporopollenites sp.** Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin.

**Monosaccate pollen.** Kumar 1994: 13, pl 1, fig 2, LATE CRETAEOUS-EOCENE (Disang Formation), Silchar-Haflong Road Section, Assam.

**Monosaccate pollen.** Kumar 1994: 41, pl 6, fig 7, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam (Reworked).

**Monosaccate pollen.** Kumar 1994: 208, pl 36, fig 11, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

**MONOSULCITES** Cookson ex Couper, RETECTINES.

**Monosulcites magnus** Dutta & Sah = **Spinomonosulcites magnus** (Dutta & Sah) Singh & Misra

**Monosulcites neyveliense** Ramanujam. Saxena 2000c: 163, pl 1, fig 3, MIocene (Sindudurug Formation), Mavli Mine at Redi, Sindudurug District, Maharashtra.

**Monosulcites psilatus** Sah. Salujha et al. 1991: 66, pl 1, fig 34, NEOGENE, Adamtala Well-A, Cachar District, Assam; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurrpur areas, Kangra District, Himachal Pradesh.

**Monosulcites sp.** Sarkar et al. 1994: 202, pl 3, fig 10, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

**Monosulcites sp.** Gupta et al. 2003: 211, pl 1, fig 5, PALAEOCENE-EOCENE, Ganga Basin.

**Monosulcites.** Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

**MULTIAREOLITES** Germeraad et al., DIPORINES.

**Multiareolites formosus** Germeraad et al. Ramanujam et al. 1989: 28, pl 1, fig 8, MIocene, subsurface sediments of eastern coast of southern India.

**MYRICACEOIPOLLENITES** Potonié ex Potonié, TRIPORINES.


**Myricaceoipollenites rarucus** Sah. Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin.

**Myricaceoipollenites sp.** Kumar 1994: 92, LATE MIOCENE-PLIOCENE (Tipam Formation), Silchar-Haflong Road Section, Assam.


**MYRICIPITES** Wodehouse, TRIPORINES.

**Myricipites harrisi** (Couper) Dutta & Sah. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Saxena et al.
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1996: 21, pl 3, fig 4, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.

cf. *Myricipites harrisii* (Couper) Dutta & Sah. Kumar 1994: 13, pl 1, figs 3a, b, LATE CRETACEOUS-EOCENE (Disang Formation), Silchar-Haflong Road Section, Assam.


*Myricipites spp.* Kumar 1994: 69, 82, pl 38, fig 11, pl 43, fig 13, MIocene (Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam.


*Myricipites sp.* Saxena & Khare 2004: 74, 84, pl 2, fig 1, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

*MYRMODETITES* Cookson & Pike. TRIPORINES.

*Myrtaecidites eugenioioides* Cookson & Pike. Kumar 1994: 92, LATE MIocene-PLIOCENE (Tpam Formation), Silchar-Haflong Road Section, Assam.

*Myrtaecidites pretiosus* Salujha et al. Kumar & Takahashi 1991: 555-556, pl 18, fig 12, LATE MIocene (Bokabil Formation), Silchar-Haflong Road Section, Assam; Salujha et al. 1991: 67, pl 2, fig 57, NEOGENE, Adamtila Well-A, Cachar District, Assam; Kumar 1994: 82, pl 44, fig 18, LATE MIocene (Bokabil Formation), Silchar-Haflong Road Section, Assam.

cf. *Myrtaecidites pretiosus* Salujha et al. Kumar 1994: 30, pl 18, fig 6, pl 19, fig 4, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

cf. *Myrtaecidites sp.* Kumar & Takahashi 1991: 556, pl 5, fig 16, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

*Myrtaecidites sp.* Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

*NEOCALAMOSPORA* Kar & Bose, TRILETES.

*Neocalamospora rotunda* Bose & Kar. Kar 1990b: 237, 239, LATE OLIGOCENE-EARLY MIocene (Renji and Bhuban formations), Silchar-Haflong Road Section, Assam (Reworked).

*Neocalamospora sp.* Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam (Reworked).

*NEOCOUPERIPOLLIS* Kar & Kumar, MONOPTYCHES.

*Neocouperipollis achinatus* (Sah & Kar) Kar & Kumar = *Spinomonosulcites achinatus* (Sah & Kar) Singh & Misra.

*Neocouperipollis ankleshwarensis* Kar & Bhattacharya = *Spinomonosulcites*
ankleshwarensis (Kar & Bhattacharya) Samant & Phadtare.


Neocouperipollis brevispinosus (Biswas) Sarkar & Singh = Spinomonosulcites brevispinosus (Biswas) Kumar.


Neocouperipollis cymbatus (Venkatachala & Rawat) Saxena & Khare 2004: 74, 78, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkonchadalapuram Well 12, Tiruchirapalli District, Tamil Nadu. 

Couperipollis cymbatus Venkatachala & Rawat 1972: 296, pl 1, figs 11-12, PALAEOCENE-EOCENE, Cauvery Basin, Tamil Nadu.


Couperipollis donaensis Rao et al. 1985: 10, pl 1, figs 11-13, EARLY MIocene (Dona Member, Bhuhan Formation), Sonapur-Badarpur Road Section, Jaintia Hills, Meghalaya and Cachar District, Assam.

Neocouperipollis kutchensis (Venkatachala & Kar) Kar & Kumar = Acanthotricolpites kutchensis (Venkatachala & Kar) Singh & Misra.

Neocouperipollis magnus (Dutta & Sah) Kar & Kumar = Spinomonosulcites magnus (Dutta & Sah) Singh & Misra.

Neocouperipollis pyrisspinosus Sarkar & Singh. Sarkar & Prasad 2000b: 147, pl 2, fig 1, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Ghaggar river near Kharak village, Morini Hills, Haryana; Saxena & Sarkar 2000: 257, MIDDLE EOCENE (Siju Formation), Simsang River Section near Siju, South Garo Hills District, Meghalaya; Singh et al. 2003: 204, pl 2, fig 17, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Koti areas, Solan District, Himachal Pradesh.


Monosulcites rarispinosus Sah & Dutta 1966: 76, pl 1, figs 26, EARLY EOCENE (Cherra Formation), Laitryngew, South Shillong Plateau, Meghalaya.


Neocouperipollis robustus (Saxena) Saxena & Khare 2004: 74, 78, LATE PALAEOCENE-MID-
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DLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Couperipollis robustus Saxena 1979: 131-132, pl 1, fig 8, PALAEOCENE (Matanomadh Formation), Matanomadh, Kutch District, Gujarat.

Neocouperipollis spinorobustus (Kar & Kumar) Kar & Kumar = Spinomonosulcites spinorobustus (Kar & Kumar) Singh & Misra.

Neocouperipollis wodehousei (Venkatachala & Kar) Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya. Invalid combination.

Neocouperipollis wodehousei (Venkatachala & Kar) Saxena & Khar 2004: 47, pl 12, fig 30, EARLY-MIDDLE EOCENE, near Therriaghat, Meghalaya.

Neocouperipollis sp. Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Neocouperipollis wodehousei (Venkatachala & Kar) Saxena & Khare 2004: 74, 78, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Araceaepites wodehouseii Biswas 1962: 47, pl 12, fig 30, EARLY-MIDDLE EOCENE (Sylhet Limestone Formation), near Therriaghat, Meghalaya.

Neocouperipollis sp. Mandal et al. 1996: 80, pl 1, fig 24, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands.

Neocouperipollis sp. Saxena et al. 1996: 22, pl 2, fig 2, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.


Neoticrichotomosulcites acrocomiae Samant & Phadtare, TRICHOTOMOCOLPATES.

Neoticrichotomosulcites acrocomiae Samant & Phadtare 1997: 34, pl 6, figs 16-18, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 3, fig 8, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

Neoticrichotomosulcites foveolatus Samant & Phadtare 1997: 33, pl 7, figs 1-2, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, pl 2, fig 2, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Neoticrichotomosulcites sp. Ramanujam et al. 1999: 35, pl 1, figs 20-21, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.

Nepenthidites Kumar, TETRADITES.

Nepenthidites laityngeweensis Kumar 1995: 74, pl 2, fig 7, PALAEOCENE (Lakadong Sandstone), Laitryngew, Khasi Hills, Meghalaya.


Neyvelipollenites Ramanujam, PTYCHOTRIPORINES.

Neyvelipollenites sp. Ramanujam et al. 1991: 54, pl 1, fig 29, EARLY MIocene, Pattanakad Borewell, Alleppey District, Kerala.

Neyvelisporites Ramanujam, MONOLETES.

Neyvelisporites cooksoniae Ramanujam. Singh et al. 1992: 56, pl 1, fig 3, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

Neyvelisporites sp. Rao & Rajendran 1996: 67, pl 1, fig 9, MIOCENE (Quilon Formation), Meenkunnu Phase I, Cannanore District, Kerala.

NIGERIPOLLIS Srivastava, TRIPTYCHES.

Nigeripollis scabratus (van Hoeken-Klinkenberg) Srivastava. Kumar & Takahashi 1991: 557, pl 15, fig 7, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 70, pl 38, fig 4, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.


NYMPHAEACIDITES Sah, SPAEROZONISULCATES.

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Nyssapollenites pseudocruciatus (Potonié) Thiergart. Kumar 1994: 46, pl 23, fig 12, OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.


Nyssoidites in West Bengal.


Nyssidites sp. Gupta et al. 2003: 211, pl 1, fig 13, PALAEOCENE-EOCENE, Ganga Basin.

Ocimumpollenites Kar, POLYPTCHES.

Ocimumpollenites indicus Kar 1996: 46, pl 1, figs 1-6, 8, EARLY EOCENE (Palana Formation), Borehole core no. K 12 (Depth 80 m), Kuchaur-Benia area, Bikaner District, Rajasthan; Sharma 2000: 52, pl 1, fig 13, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan; Kar & Sharma 2001: 130, pl 5, fig 3, pl 6, figs 8, 10, pl 7, fig 3, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Sarkar & Prasad 2002: 165, pl 1, figs 1-2, LATE YPRESIAN (Subathu Formation), Koshalaya Nala Section near Koti, Solan District, Himachal Pradesh; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aldi Formation), Barmer Basin, Rajasthan.

OCULOPOLLI S Pflug, TRIPORINES.


OPERCULOCULARITES Kar, INCERTAE SEDIS.

Operculosculptites baculatus in Kar 1990a: 178, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura. Nomen nudum.

Operculosculptites globatus in Kar 1990a: 178, pl 2, figs 21-26, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura. Nomen nudum.

Operculosculptites rokhiaensis in Kar 1991: 3, pl 1, figs 7-11, MIOCENE, Rokhia Borehole core no. 1 (Depth 2095-2100 m), Tripura; Mandal et al. 1996: 81, OLIGOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Kumar et al. 2001: 245, fig 6.11, MIO-PLIOCENE (Namsang Formation), Tinali Well-7, Upper Assam.

Operculosculptites rokhiaensis Kar 1991: 3, pl 1, figs 12-19, MIOCENE, Rokhia Borehole core no. 1 (Depth 205-210 m), Tripura; Kumar et al. 2001: 245, MIO-PLIOCENE (Namsang Formation), Tinali Well-7, Upper Assam.
Oberculosculptites sp. Kar 1990a: 178, pl 2, figs 34-36, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

Oberculosculptites sp. Chandra & Kumar 1998: 64, pl 2, fig 15, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

Oberculosculptites sp. Srivastava & Bhattacharyya 2000: 375, pl 2, figs 12-13, TERTIARY, Oligocene, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

Oberculosculptites sp. Srivastava & Bhattacharyya 2000: 375, pl 2, figs 12-13, TERTIARY, Oligocene, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

Oberculosculptites sp. Kumar et al. 2004: 158, NEOGENE and PLEISTOCENE, DSDP Leg 22, Bengal Fan, Indian Ocean.

Ophioglossisporites Nagy, Apiculati.

Ophioglossisporites Nagy, Apiculati.

Ophioglossisporites Nagy, Apiculati.

Ophioglossisporites Nagy, Apiculati.

Ornatetradites Rao & Ramanujam, Tetradites.


Ornatetradites droseroides Rao & Ramanujam. Rao 1990: 248, pl 3, fig 27, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Ramanujam et al. 1991: 54, pl 1, fig 34, EARLY MIOCENE, Pattananad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 3, fig 21, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 22, fig 3W, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

Ornatetradites keralaensis Rao 1995a: 333, pl 4, figs 4-5, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Kumar et al. 2001: 244, fig 5.15, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam (wrongly spelt as Ornataetradites keralayensis).

Osmundacites Couper, Apiculati.


Osmundacites inequalis Sah. Saluja et al. 1991: 65, pl 1, fig 7, NEOGENE, Adam tila Well-A, Cachar District, Assam.

Dibrugarh District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Samant & Tapaswi 2001: 126, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Saxena & Khare 2004: 73, pl 1, fig 3, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Osmundacidites microgranifer** Sah & Jain. Saxena & Misra 1990: 264, pl 1, fig 2, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra.


**Osmundacidites wellmania** Couper. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 237, 239, EOCENE-EARLY MIOCENE (Disang, Laisong, Jenam, Renji and Bhuhan formations), Silchar-Haflong Road Section, Assam; Mandaokar 1993: 139, pl 2, fig 29, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, pl 2, fig 14, TERTIARY, subsurface sediments in Upper Assam; Singh & Sarkar 1994: 50, pl 1, fig 6, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Mandal et al. 1996: 81, pl 1, fig 3, MIDDLE-LATE EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changleug District, Arunachal Pradesh; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 187, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimitupui District, Mizoram.

**Osmundacidites cf. O. wellmania** Couper. Kapoor et al. 1997: 32, fig 2c, PALAEOCENE-EOCENE (Subatuth Formation), Kalka-Kasauli Road, Solan District, Himachal Pradesh.

**Osmundacidites sp.** Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya.

**Osmundacidites sp.** Saluja et al. 1991: 65, pl 1, fig 8, NEOGENE, Adamtila Well-A, Cachar District, Assam.

**Osmundacidites sp.** Kar & Bhattacharya 1992: 257, pl 1, fig 15, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.

**Osmundacidites sp.** Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam.

**Osmundacidites sp.** Singh & Sarkar 1994: 50, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.

**Osmundacidites sp.** Sarkar et al. 1994: 201, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

**Osmundacidites sp.** Rao 1995a: 326, pl 1, fig 13, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala.

**Osmundacidites sp.** Saxena & Rao 1996: 50, pl 1, fig 8, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.
Osmundacidites sp. Gupta et al. 2003: 212, pl 2, fig 12, PALAEOCENE-EOCENE, Ganga Basin (Reworked).

Osmundacidites sp. Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).


Osmundacidites. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

Ovalipollis sp. Mandal et al. 2003: 102, pl 3, fig 13, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).


Ovoidites. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

Pachydermites sp. Ramanujam et al. 1991: 3, pl 3, fig 14, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

Pachydermites sp. Germeraad et al., STEPHANOPORETI.


Pachydermites sp. Ramanujam et al. 1991: 54, pl 1, fig 32, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala.
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**PALAEOMALVACEAEOPOLLS**

**PERIPORITI.**


**MALVAEARUMPOLLIS rudis** Kar. Rao et al. 1993: 82, pl 1, figs 24-25, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Mandal 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.

**Palaeomalvaceaepollis spp. A-B.** Kar 1990a: 178, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**Palaeomalvaceaepollis sp.** Srivastava & Bhattacharyya 2000: 375, pl 1, fig 7, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (wrongly spelt as *Palaeomalvaceaearumpollis* sp.).

**Palaeozoic reworked pollen.** Mandal 1997: 100, pl 1, figs 30, 34, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

**PALEOARALIACEAEOPITES** Biswas, PTYCHOTRIPORINES.

**Paleoaraliaceaepites distinctus** Samant & Phadtare 1997: 35, pl 7, figs 5-8, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

**Paleoaraliaceaepites indica** Biswas. Mandal 1997: 104-105, pl 2, figs 14-16, EARLY EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.

**Paleoaraliaceaepites indistinctus** Samant & Phadtare 1997: 35, pl 7, figs 9-11, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 3, fig 10, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

**PALEOCAESALPINIACEAEOPITES** Biswas, TRIPYTCHES.

**Paleocaesalpinaceaepites eocenica** (Biswas)

Venkatachala & Rawat. Ambwani 1993: 160,

**Paleocaesalpiniaaceaeaeptes** sp. Pundeer & Mehrrota 2000: 141. THANETIAN-Ypresian (Basal Sandstone), Upper Assam Shelf.

**PALEORUBIACEAEPTES** Biswas, POLYPTYCHES.

**Paleorubiaaceaeaeptes psychotria** Biswas. Mandaokar 2002a: 116. EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.

**PALEOSANTALACEAEAEPTES** Biswas, PTYCHOTRIPORINES.

**Paleosantalaceaeaeptes dinoflagellatus** Biswas. Saxena & Misra 1990: 265. NEOGENE (Ratnagiri Beds), Amberiawadi Section, Sindhudurg District, Maharashtra; Kumar & Takahashi 1991: 557-558, pl 5, fig 3. MIDDLE OLIGOCENE (Janam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 30, pl 17, fig 1. MIDDLE OLIGOCENE (Janam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 206. PALAEOCENE (Lakadong Sandstone), Jairain and Laitrymbai, Jaintia Hills District, Meghalaya.

**Paleosantalaceaeaeptes ellipticus** Sah & Kar. Kar et al. 1994: 186. TERTIARY, subsurface sediments in Upper Assam; Saxena et al. 1996: 21, pl 3, fig 12. PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Rao 2000: 297. OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Mandaokar 2002a: 116. EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.

**Paleosantalaceaeaeptes minutus** Sah & Kar. Kar 1990a: 177. MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Singh & Sarkar 1994: 50, pl 1, fig 1. EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Rao & Rajendran 1996: 66. MIOCENE, Cannanore District, Kerala; Saxena & Rao 1996: 48, pl 2, fig 17. EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Kumar et al. 2001: 244. OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Gupta et al. 2003: 211. PALAEOCENE-EOCENE, Ganga Basin; Saxena & Khare 2004: 74. LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


**Paleosantalaceaeaeptes reticulatus** Samant & Phadatne 1997: 36, pl 7, figs 12-13. EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, pl 2, fig 5. EARLY EOCENE (Surat lignite,
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Cambay Shale Formation, Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

**Paleosantalaceaepites sp.** Kumar 1994: 46, pl 22, fig 16, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

**Paleosantalaceaepites sp. (Group of pollen grains).** Kumar et al. 1995: 1026, fig 4d, MIOCENE (Workalli Formation), Bharathi and Kundra Clay Mines, Kerala.

**PALMAEPOLLENITES** Potonié ex Potonié, MONOPTYCHES.

**Palmaepollenites communis** Sah & Dutta = Monocolpopollenites communis (Sah & Dutta) Kumar & Takahashi.

**Palmaepollenites elongatus** Samant & Phadtare 1997: 38, pl 7, fig 19, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 4, fig 5, EARLY EOCENE (Kharasia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Rao et al. 2003: 211, pl 1, fig 3, PALAEOCENE-EOCENE, Ganga Basin; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aklil Formation), Barmer Basin, Rajasthan.

**Palmaepollenites indicus** Ramanujam. Kumar 1996: 112, pl 2, fig 6, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Palmaepollenites karii** Saxena 1993: 195.

**Palmaepollenites longicolpus** Kar & Singh 1986 (non Mathur & Mathur 1969): 114, pl 10, figs 5, 26, LATE CRETACEOUS (Jadukata Formation), Ranikor-Barsaura Road Section, Nongnah, Meghalaya.


Palmaepollenites nadhamunii Venkatatala & Kar. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandal 1991: 325, PALAEOCENE (Lakadong Sandstone Member, Syihat Limestone Formation), Thanjinath, Khari Hills, Meghalaya; Kar & Bhattacharya 1992: 251, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District.
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Palmaepollenites neyveli Ramanujam. Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala (wrongly spelt as *Palmaepollenites neyveliensis*); Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala (wrongly spelt as *Palmaepollenites neyveliensis*); Hait & Banerjee 1994: 115, pl 1, fig 7, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram (wrongly spelt as *Palmaepollenites neyveliensis*); Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Samant & Phadtare 1997: 37, pl 7, fig 18, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Ramanujam et al. 1998c: 55, fig 1, MIOCENE, Borewell NSP-1 and NSP-2 near Narasapur, West Godavari District, Andhra Pradesh (wrongly spelt as *Palmaepollenites neyveliensis*); Ramanujam et al. 1999: 35, pl 1, figs 11, 15, 17, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu (wrongly spelt as *Palmaepollenites neyveliensis*).

Palmaepollenites ovatus Sah & Kar. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjainath, Khasi Hills, Meghalaya; Kar & Bhattacharya 1992: 251, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Mandaokar 1993: 139, pl 1, fig 1, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Shannukhappa & Koshal 1993: 200, 201, MIDDLE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Hait & Banerjee 1994: 115, pl 1, fig 8, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram; Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Misra & Kapoor 1994: 167, EARLY MIOCENE (Kharsalia Clay Formation), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 1996c: 124, MIDDLE EOCENE (Ankleshwar Formation), Near Khasi Hills, Sylhet Limestone Formation, Thanjainath, Khasi Hills, Meghalaya; Khasi Hills, Sylhet Limestone Formation, Thanjainath, Khasi Hills, Meghalaya; Ramanujam et al. 1998c: 55, fig 1, MIOCENE, Borewell NSP-1 and NSP-2 near Narasapur, West Godavari District, Andhra Pradesh (wrongly spelt as *Palmaepollenites neyveliensis*); Ramanujam et al. 1999: 35, pl 1, figs 11, 15, 17, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu (wrongly spelt as *Palmaepollenites neyveliensis*).
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Palmepollenites plicatus Sah & Kar. Mandaokar 1993: 139, pl 2, fig 24, LATE Oligocene (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Mitra et al. 2000: 126, pl 1, fig 16, Neoogene (Siwalik Group), Darjeeling Foothills, Eastern Himalaya; Saxena 2000c: 163, pl 2, fig 17, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Saxena & Sarkar 2000: 257, pl 2, fig 2, MIDDLE EOCENE (Siju Formation), Sumsang River Section near Siju, South Garo Hills District, Meghalaya; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin; Saxena & Khar 2004: 74, LATE EOCENE-OLIGOCENE, Ganga Basin, Bor Snowdonia, Bikaner District, Rajasthan.


Palmepollenites. Sharma 2000: 54, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan.

PALMIDITES Couper, MONOPTYCHES.

Palmidites aplicatus Kar & Kumar. Singh 1990: 219, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Singh & Tripathi 1990: 329, pl 1, fig 12, MIocene (Siwalik sediments), Arunachal Pradesh; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

Palmidites assamicus Singh. Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Saxena & Sarkar 2000: 257, MIDDLE EOCENE (Siju Formation), Sumsang River Section near Siju, South Garo Hills District, Meghalaya; Tripathi et al. 2000: 243, pl 1, fig 14, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

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Palimidites excellensus Kar & Kumar. Tripathi 1995: 47, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan (wrongly spelt as *Palimidites excellens*).

Palimidites granulatus Mehrotra. Tripathi et al. 2000: 243, pl 2, fig 7, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

Palimidites intrafoveolatus Sarkar & Singh. Singh et al. 2003: 204, pl 2, fig 18, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Koti areas, Solan District, Himachal Pradesh.

Palimidites maximus Couper. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Rao 1990: 246, pl 1, fig 10, EOCENE-EARLY MIocene, Arthungal Borehole, Alleppey District, Kerala; Saxena & Misra 1990: 265, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra; Singh & Tripathi 1990: 329, MIocene (Siwalik sediments), Arunachal Pradesh; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 17-18, 31, 46, 51, 59, 70, 82, 98, pl 4, fig 20, pl 14, figs 1, 2, 4, 8, pl 15, fig 9, pl 16, fig 15, pl 20, fig 11, pl 22, figs 7, 15, pl 24, fig 11, pl 25, fig 6, pl 26, fig 9, pl 27, fig 1, pl 38, figs 1, 6, OLIGOCENE-PLIOCENE (Laisong, Jenam, Renji, Bhurban, Bokabil and Dupitila formations), Silchar-Haflong Road Section, Assam; Singh & Sarkar 1994: 50, pl 1, fig 19, EARLY MIocene (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Kapoor et al. 1997: 33, fig 2g, PALAEOCENE-EOCENE (Subathu Formation), Kalka-Kasauli Road, Solan District, Himachal Pradesh; Mandal 1997: 100, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Srivastava & Bhattacharyya 2000: 375, pl 2, fig 8, EARLY TERTIARY, southwest of the thrust in Tippi and Pini jula Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh; Kar & Sharma 2001: 129, pl 2, fig 2, 5, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Mandaokar 2002b: 21, pl 1, fig 3, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Gupta et al. 2003: 211, pl 1, fig 6, PALAEOCENE-EOCENE, Ganga Basin; Saxena & Khare 2004: 74, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Palimidites cf. maximus Couper. Kumar & Takahashi 1991: 558, pl 7, fig 13, 15, fig 1, EARLY and EARLY LATE MIocene (Lower and Upper Bhuban Formation), Silchar-Haflong Road Section, Assam.

Palimidites minor Kumar 1994: 30, 92, pl 15, fig 4, pl 45, fig 10, MIDDLE OLIGOCENE and LATE MIocene-PLIOCENE (Jenam and Tipam formations), Silchar-Haflong Road Section, Assam.

Palmidites noviculatus Sarkar & Singh. Sarkar & Prasad 2000b: 147, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Ghaggar river near Kharak village, Morni Hills, Haryana.

Palmidites obtusus Tripathi & Singh. Singh & Tripathi 1990: 326, pl 1, fig 23, MIocene (Siwalik sediments), Arunachal Pradesh.


Palmidites psilatus Kumar 1994: 14, 31, 46, 60, 82, 92, pl 4, fig 3, pl 15, figs 1-2, 5-6, pl 22, fig 6, pl 26, fig 1, OLIGOCENE-PLIOCENE (Laisong, Jemam, Renji, Bhurban, Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam.

Palmidites punctatus Mehrotra. Saxena et al. 1996: 21, pl 2, fig 4, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Tripathi et al. 2000: 243, pl 2, fig 8, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

Palmidites sp. Saxena & Misra 1990: 265, pl 1, fig 8, NEOCENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra.

Palmidites sp. Singh & Tripathi 1990: 329, pl 1, fig 26, MIocene (Siwalik sediments), Arunachal Pradesh.

Palmidites sp. A. Kar & Bhattacharya 1992: 257, pl 1, fig 20, EARLY EOCENE, Gujar Dam Section and Akri lignite, Kutch District, Gujarat.

Palmidites sp. B. Kar & Bhattacharya 1992: 257, pl 1, fig 30, EARLY EOCENE, Gujar Dam Section and Akri lignite, Kutch District, Gujarat.

Palmidites sp. B. Kumar 1994: 60, pl 32, fig 4, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.


Palmidites sp. Saxena et al. 1996: 22, pl 2, fig 7, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.

Palmidites sp. Chandra & Kumar 1998: 53, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

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**Palimidites sp.** Rao & Patnaik 2001: 277, pl 3, fig 10, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

**Palynomorph type 1.** Saxena & Bhattacharyya 1990: 113-114, pl 2, fig 11, OLIGOCENE-EARLY MIOCENE (Dharmala Group), Manjhi Khad Section near Dharmala, Kangra District, Himachal Pradesh.

**Palynomorph type 1.** Mandal et al. 2003: 106, pl 1, fig 17, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

**Pandaniidites texus** Elsik. Kumar & Takahashi 1991: 558-559, pl 6, fig 14, EARLY OLIGOCENE, (Laisong Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 18, 82, pl 4, fig 16, EARLY OLIGOCENE and LATE MIocene (Laisong and Bokabil formations), Silchar-Haflong Road Section, Assam.

**Pandaniidites sp.** Saxena & Misra 1990: 265, pl 1, fig 14, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra.

**Pandanus sp.** Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmala and Siwalik), Dharmala and Nurpur areas, Kangra District, Himachal Pradesh.

**Pandaniidites sp.** Saxena & Misra 2001: 277, pl 3, fig 10, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

**Parasaccites distinctus** Tiwari. Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road, Jaintia Hills District, Meghalaya (Reworked).

**Parasaccites korbaensis** Bharadwaj & Tiwari. Kar 1990a: 180, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 240, EARLY MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked); Mandaokar 2000a: 320, EARLY MIocene (Bhuban Formation), Ramkawm near Chandmari, Aizawl District, Mizoram (Reworked).

**Parasaccites obscurus** Tiwari. Srivastava & Bhattacharyya 2000: 375. EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

**Parasaccites sp.** Mandaokar 1991: 27, EARLY MIocene, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked).

**Parasaccites sp. 1.** Singh et al. 1991: 42, pl 2, fig 9, EARLY MIocene (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

**Parasaccites sp. 2.** Singh et al. 1991: 42, pl 1, fig 7, EARLY MIocene (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

**Parasaccites sp.** Saxena & Rao 1996: 48, pl 3, fig 15, EARLY MIocene (Boldamgiri Formation), Adugiri-Puraksahsa Road near Boldamgiri, West Garo Hills District, Meghalaya (Reworked).

**Parasaccites sp.** Rao 2000: 297, pl 2, fig 18, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya (Reworked).

**Parasaccites sp.** Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland (Reworked).
Parasaccites sp. Gupta et al. 2003: 212, pl 2, fig 1. PALAEOCENE-EOCENE, Ganga Basin (Re-worked).

PARAVURIPOLLIS Rao & Ramanujam, MONOPTYCHES.

Paravuripollis mulleri Rao & Ramanujam. Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1992: 21, figs 2H, I, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 81, pl 1, fig 13, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Rao et al. 1995: 374, fig 16, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala; Ramanujam et al. 1999: 35, pl 1, figs 12-13, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Paravuripollis sp. Ramanujam et al. 1991: 3, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

PARIPOLLIS Partridge in Stover & Partridge, TETRADITES.

Paripollis broachensis Samant & Phadate 1997: 39, pl 7, fig 20, pl 8, figs 1-5, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

Paripollis reticulatus Samant & Phadate 1997: 39, pl 8, figs 6-7, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

PEL LICIEROIPOLLIS Sah & Kar, PROLATI.

Pellicieropollis langenheimii Sah & Kar. Kar 1990a: 177, pl 5, fig 73, pl 9, fig 133, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura. Kar 1990b: 232, 236, 237, EOCENE, MIDDLE-LATE OLIGOCENE (Disang, Jenam and Renji formations), Silchar-Haflong Road Section, Assam; Phadatere & Thakur 1990: 284, pl 1, figs 1-6, EARLY-MIDDLE MIOCENE (Rajpardi lignite), Gujarat; Kar & Bhattacharya 1992: 251, 252, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin and Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Mandaokar 1993: 139, pl 2, figs 2, 19, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Shanmukhappa & Koshal 1993: 195, EARLY EOCENE (Cambay Shale Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Kar et al. 1994: 186, pl 2, figs 33-34, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao & Rajendra 1996: 66, MIOCENE, Cannanore District, Kerala; Mandal 1997: 99, pl 1, figs 24-26, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Mandaokar 2000b: 181, pl 1, fig 25, pl 2, figs 6, 10, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 18, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 297, pl 1, fig 16, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Samant 2000: 114, pl 4, fig 3, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Saxena & Sarkar 2000: 257, pl 2, fig 6, MIDDLE EOCENE (Siju Formation), Simsang River Section near Siju, South Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 275, pl 1, fig 3, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7,
Upper Assam; Mandaokar 2002a: 116, EARLY MIocene (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Saxena & Khare 2004: 74, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondachalapuram Well 12, Tiruchirapalli District, Tamil Nadu.


*Pellicieroipollis minutus* in Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 181, pl 2, figs 27, 29, 45, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

*Nomen nudum.*

*Pellicieroipollis sp.* Kar 1990a: 177, pl 5, fig 81, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

*Pellicieroipollis sp.* Mandaokar 1997: 100, pl 1, fig 27, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

*Pellicieroipollis sp.* Mandaokar 2000b: 183, pl 2, figs 11, 19, 43, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

*Pellicieroipollis sp.* Mandal et al. 2003: 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

*Pentachotomosulcites in Misra & Kapoor. Nomen nudum.*

*Pentachotomosulcites echinatus* in Misra & Kapoor 1994: 156, pl 4, fig 73, PALAEOCENE-EARLY EOCENE (Subathu and Basal Dharmasala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh.

*Pentacolpites in Rao & Vimal. Nomen nudum.*


*Pentadesmapites* Ramanujam et al., PTYCHOPOLPORINES.

*Pentadesmapites neyveliense* Ramanujam et al. Ramanujam et al. 1991: 3, pl 3, fig 13, NEOGENE, Mynagapalli borewell, Quilon District, Kerala; Ramanujam et al. 1992: 21, figs 3S, T, EARLY MIocene (Mayyanad and Quilon formations), Kalaikode borewell, Quilon District, Kerala.

*Perfotricolpites* González Guzmán, TRIPTYCHES.


*Perfotricolpites neyvelii* (Navale & Misra) Mandal & Kumar 2000: 201-203, pl 1, figs 13-15, MIocene (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam; Rao 2004: 125, 130, pl 1, figs 6-8, MIocene (Sindhudurg Formation), Kalivadi, Sindhudurg District, Maharashtra..

*Plumbaginacipites neyvelii* Navale & Misra. Ramanujam et al. 1989: 29, pl 1, figs 14-15, MIocene, subsurface sediments of eastern coast of southern India; Singh et al. 1992: 57, pl 2, fig 5, MIocene (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Rao 1996: 157, pl 1, fig 4, EARLY MIocene, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendran 1996: 66, MIocene, Cannanore District, Kerala; Saxena & Rao 1996: 48, pl 2, figs 8-9, EARLY MIocene (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo.
Hills District, Meghalaya; Rao 2000: 297, pl 2, fig 7, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Kumar et al. 2001: 245, EARLY-MIDDLE MIOCENE (Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.

*Pereotricolpites rajpardiensis* Samant & Phadtare 1997: 40, pl 8, figs 8-10, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Tapawsi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

*Piceaepollenites excellens* Kar & Sharma, MONOPTYCHES. Kar 1990b: 232, 236, 237, EOCENE, MIDDLE-LATE OLIGOCENE (Disang, Jemam and Renji formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.

*Piceaepollenites naeraensis* Mathur & Mathur. Kar 1990a: 176, pl 4, fig 64, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

*Piceaepollenites sp.* Banerjee & Nandi 1994: 219, pl 1, fig 19, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram.

*Piceaepollenites sp.* Chandra & Kumar 1998: 66, pl 2, fig 16, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

*Piceaepollenites sp.* Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram.


*Piladiporocolpites* Kar, DIPORINES. Kar 1995b: 383, pl 1, figs 1-6, EARLY EOCENE (Palana Formation), Borokhet, Bikaner District, Rajasthan; Kar 1990b: 232, 236, 237, EOCENE, MIDDLE-LATE OLIGOCENE (Disang, Jemam and Renji formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.

*Pereiretitricolpites anambraensis* Jan du Chene et al. 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram.

*Pereiretitricolpites indicus* Saxena & Khare 2004: 74, 80, pl 1, figs 24-25, 1, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

*Piceaepollenites excellens* Kar. Kar 1990a: 188, pl 4, fig 69, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 236, 237, EOCENE, MIDDLE-LATE OLIGOCENE (Disang, Jemam and Renji formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.

**Piladiporocolpites.** Sharma 2000: 54, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan.

**PILAMONOLES**es Kar, SCULPTATO-MONOLETI.

*Pilamonoletes excellens* in Kar 1990a: 176, pl 2, fig 43, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam. Nomen nudum.

*Pilamonoletes excellens* Kar 1991: 2, pl 1, figs 1-4, MIOCENE, Rokhia Borehole core no. 1 (Depth 195-200 m), Tripura; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 2, figs 5, 9, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1995: 26, pl 1, figs 15, 39, 51, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Saxena & Rao 1996: 46, pl 1, fig 23, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandal 1997: 99, pl 1, fig 3, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Rao & Nair 1998: 52: MIOCENE, Kannanellur-Kundra Road area, Quillon District, Kerala; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 295, pl 1, fig 11, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.

**Pilamonoletes moderatus** in Kar 1990a: 176, pl 2, fig 37, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 237, 240, LATE OLIGOCENE-EARLY MIOCENE (Renji and Bhurban formations), Silchar-Haflong Road Section, Assam. Nomen nudum.

*Pilamonoletes moderatus* Kar 1991: 2, pl 1, figs 5-6, MIOCENE, Rokhia Borehole core no. 1 (Depth 1450-1455 m), Tripura; Mandaokar 1993: 139, pl 2, fig 6, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1995: 27, pl 1, figs 6, 23, 26, 29, 31-32, 34-35, 37, pl 2, fig 8, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh.

**PILAPOLYCOLPORITES**es Kar & Sharma, PTYCHOPOLYPORINES.

*Pilapolycolporites verrucatus* Kar & Sharma 2001: 130, 139, pl 8, figs 2, 7-8, 10-11, LATE PALAEOCENE-EARLY EOCENE (Palana Forma-
R. K. Saxena and G. K. Trivedi

**PILATETRADITES** Kumar, *TETRADITES*.

Pilatetradites meghalayaensis Kumar 1995: 78, pl 2, figs 8, 11, PALAEOCENE (Lakadong Sandstone), Laitryngew, Khai Hills, Meghalaya; Acharya 2000: 22, EARLY EOCENE, Borehole No. MI 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu.

**PILATRICOLPORITES** Kar, *PTYCHOTRIPORINES*.

Pilatricolporites sp. Saxena & Sarkar 2000: 259, pl 2, fig 3, MIDDLE EOCENE (Siju Formation), Samsang River Section near Siju, South Garo Hills District, Meghalaya.

**PILATRISYNCLPITES** Kar et al. *TRIPTYCHES*.

Pilatrisynclpites triangulatus Kar et al. 1994: 287, figs 1-2, text-fig 2, OLIGOCENE (Barail Group), Nahorkatiya Well no. 268 (Depth 2270 m), Upper Assam; Kar et al. 1994: 187, pl 1, fig 7, TERTIARY, subsurface sediments in Upper Assam; Mandal 2000: 70, fig 3, EARLY EOCENE (Naredi Formation), Waghopadar, Kutch District, Gujarat.

**PINJORIAPOLLIS** Saxena & Singh, *MONOPTYCHES*.


Pinjoriapollis spp. Kumar 1994: 93, 98, LATE MIOCENE-PLEISTOCENE (Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam.

**PINUS (pollen).** Phadtare et al. 1994: 74, 75, pl 1, fig I, Upper Siwalik, Haripur Khol, Sirmaur District, Himachal Pradesh.

**PINUSPOLLENITES** Raatz ex Potonié, *PINOSACCITI*.


Pinuspollenites chandigarhensis Rao & Patnaik 2001: 276, pl 2, figs 12-14, LATE PLEISTOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

Pinuspollenites crestus Kar. Kar 1990a: 176, pl 4, figs 61-63, pl 9, figs 125-128, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 237, 240, EOCENE-EARLY MIOCENE (Disang, Laisong, Jermum and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Kar et al. 1994: 186, pl 2, fig 31, TERTIARY, subsurface sediments in Upper Assam; Singh & Sarkar 1994: 50, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Sarkar et al. 1994: 201, pl 2, fig 11, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Chandra & Kumar 1998: 65-66, pl 3, figs 8-9, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramkawn area Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 177-178, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Trivedi & Saxena 2000: 275, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near
Umrongso, North Cachar Hills District, Assam; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, pl 2, fig 5, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh; Kapoor 2004: 186, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram; Mandal & Vijaya 2004: 497, fig 4C, OLIGOCENE-EARLY MIOCENE, Bordehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

*Pinuspalenites foveolatus* Rao = *Pityosporites foveolatus* (Rao) Kumar & Takahashi.

*Pinuspalenites cf. foveolatus* Rao. Misra et al. 1996: 95, 96, EARLY MIOCENE (Baghmara Formation), Tura-Dalu Road Section along Bugi River and in the vicinity of Baghmara, Garo Hills, Meghalaya.

*Pinuspalenites nadahensis* Rao & Patnaik 2001: 276, pl 2, figs 7-8, LATE PLEISTOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

*Pinuspalenites tenuicorpus* Singh & Sarkar. Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Singh & Sarkar 1994: 50, pl 1, figs 11-12, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Mitra et al. 2000: 126, pl 2, fig 4, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

*Pinuspalenites sp.* Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalal Borehole No. 1 and Baramura Borehole No. 2, Tripura.

*Pinuspalenites sp.* Singh & Tripathi 1990: 329, MIOCENE (Siwalik sediments), Arunachal Pradesh.

*Pinuspalenites sp.* Banerjee & Nandi 1994: 219, pl 1, fig 23, LATE MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram.

*Pinuspalenites spp.* Misra et al. 1996: 96, EARLY MIOCENE (Baghmara Formation), Tura-Dalu Road Section along Bugi River and in the vicinity of Baghmara, Garo Hills, Meghalaya.

*Pinuspalenites sp.* Kapoor et al. 1997: 33, fig 2d, PALAEOCENE-EOCENE (Subathu Formation), Kalka-Kasauli Road, Solan District, Himachal Pradesh.

*Pinuspalenites sp.* Kumar et al. 2001: 245, LATE MIOCENE (Girujan Clay Formation), Tinali Well-7, Upper Assam.


**PISTILIPOLLENITES** Rouse, TRIPORINES.

*Pistilipollenites sp.* Kumar 1994: 93, LATE MIOCENE-PLIOcene (Tipam Formation), Silchar-Haflong Road Section, Assam.

**PITYOSPORITES** Seward, DISACCIATRILETI.

*Pityosporites cf. alatus* (Potonié) Thomson & Pflug. Kumar & Takahashi 1991: 578, pl 17, fig 16, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

*Pityosporites classicus* (Salujha et al.) Kumar & Takahashi 1991: 579, pl 8, fig 6, EARLY MIOCENE (Lower Bhuban Formation), Silchar-
Haflong Road Section, Assam; Kumar 1994: 51, pl 25, fig 11, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

*Podocarpidites classicus* Saluja et al. Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Saluja et al. 1991: 66, pl 1, fig 26, NEOGENE (Surma and Tipam groups), Adamtila Well A, Cachar District, Assam (Reworked); Shanmukhappa & Koshal 1993: 201, MIDDLE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Mandal 1997: 100, pl 1, fig 33, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Kar & Sharma 2001: 130. LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner, Rajasthan.

**PLATONIAPOLLENITES** Sah & Kar, PTYCHOPOLYPORINES.

*Platoniapollenites iratus* Sah & Kar. Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Mandal 1997: 100, pl 1, fig 33, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Kar & Sharma 2001: 130, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner, Rajasthan.

**PLATYSACCUS** Naumova ex Ishchenko, PODOCARPOIDITI.

*Platysaccus densus* Kar. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Bor Near No. 1, Gojalia Bor Near No. 1 and Baramura Bor Near No. 2, Tripura (Reworked).

*Platysaccus densus* (Venkatachala) Kumar (non Kar 1968) = *Platysaccus kutchensis* Saxena

*Platysaccus kutchensis* Saxena 1993: 196.

*Platysaccus densus* (Venkatachala) Kumar 1973: 118, pl 6, fig 121, LATE JURASSIC (Jabalpur Formation), Sehora, Narsinghpur District, Madhya Pradesh.

*Podocarpidites densus* Venkatachala 1969: 215, pl 5, figs 16-17, 21, EARLY CRETACEOUS (Bhuj Series), Pat River near Bhuj, Kutch District, Gujarat.

*Platysaccus ovatus* Maithy. Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road, Jaintia Hills District, Meghalaya (Reworked).
Platysaccus papilionis Potonié & Klaus. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 237, 240, LATE OLIGOCENE-EARLY MIOCENE (Renji and Bhuban formations), Silchar-Haflong Road Section, Assam (Reworked).

Platysaccus queenslandii de Jersey. Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

Platysaccus sp. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked).

Platysaccus sp. Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam (Reworked).

Platysaccus sp. Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram (Reworked).

Platysaccus sp. Mandaokar 2002b: 21, pl 2, fig 13, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland (Reworked).

Playfordiaspora Maheshwari & Banerji, SACCIZONATI.

Playfordiaspora cancellosa (Playford & Dettmann) Maheshwari & Banerji. Mandal et al. 2003: 102, 104, pl 3, fig 14, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Playfordiaspora sp. Singh et al. 1991: 42, pl 2, fig 5, OLIGOCENE (Barail Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

PLICATIAPERTURITES Kar, PTYCHOTRI-PORINES.

Plicatiaperturites retipilatus Kar. Samant & Phadare 1997: 40, pl 8, figs 11-12, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

PLICATIPollenITES Lele, APERTACORPITI.

Plicatipollenites gondwanensis Lele. Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked); Mandaokar 1991: 27, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked).

Plicatipollenites ovatus Kar. Singh et al. 1991: 42, pl 1, fig 9, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked); Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya (Reworked).

Plicatipollenites sp. Salujha et al. 1991: 68, NEOGENE (Surma and Tipam groups), Adamtala Well A, Cachar District, Assam (Reworked).

Plicatipollenites sp. Singh et al. 1991: 42, pl 1, fig 13, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

Plicatipollenites sp. Saxena & Rao 1996: 48, pl 3, fig 18, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya (Reworked).

Plicatipollenites sp. Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram (Reworked).

Plicatipollenites sp. Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland (Reworked).

Plicatipollenites sp. Gupta et al. 2003: 212, pl 2, fig 2, PALAEOCENE-EOCENE, Ganga Basin (Reworked).
PLUMBAGINACIPITES Navale & Misra, TRIPTYCHES.


Podocarpidites decorus Sarkar & Singh. Sarkar 1997: 109, EOCENE (Subathu Formation), 20 km southeast of Bilaspur on Shimla-Bilaspur Highway, Bilaspur District, Himachal Pradesh; Singh et al. 2003: 197, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Koti areas, Solan District, Himachal Pradesh.

Podocarpidites densicorpus Kar. Kar 1990a: 176, pl 4, figs 66-68, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 1991: 26, EARLY MIOCENE, near of Maibong Railway Station, North Cachar Hills District, Assam; Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Chandra & Kumar 1998: 65, pl 3, figs 11, 14, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrakawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

Plumbaginacipites navalei Rao & Nair 1998: 52, pl 1, figs 20-21, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala.

Plumbaginacipites neyvelii Navale & Misra = Perforotricolpites neyvelii (Navale & Misra) Mandal & Kumar.

PLURICOLUMELLATIPOLLISS Kar, PYTCHOPOLYPORINES.

Pluricolumellatipollis pachyexinus Kar 1995a: 165, 166, pl 1, figs 3-7, EARLY EOCENE, Borehole core no. K-12 at Kuchaur-Benia area, Bikaner District, Rajasthan; Sharma 2000: 52, pl 1, fig 11, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan; Kar & Sharma 2001: 130, pl 5, figs 11, 13, pl 7, fig 1, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaraur area, Bikaner District, Rajasthan.

PODOCARPIDITES Cookson ex Couper, PODOCARPOIDITI.


Podocarpidites classicus Saluja et al. = Pitiosporites classicus (Saluja et al.) Kumar & Takahashi.

Podocarpidites cognatus Kar. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 2000b: 180, pl 1, fig 14, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2002b: 21, pl 2, figs 6, 9, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.
Podocarpidites densus
Venkatachala = Platysaccus kutchensis Saxena.

Podocarpidites ellipticus

Podocarpidites granulatus

Podocarpidites khasiensis
Dutta & Sah. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 240, EOCENE-MIDDLE OLIGOCENE and EARLY MIOCENE (Disang, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandal 1990: 326, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Sarkar 1991: 3, EARLY EOCENE (Kakara Series), near Kakara-Chapla group of villages, north of Gambhbar River, Shimla District, Himachal Pradesh; Sarkar et al. 1994: 201, pl 2, fig 7, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand; Mandal et al. 1996: 80, LATE CRE- TACEOUS, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 177-178, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, pl 2, fig 12, LATE OLIGOCENE (Tikak Parbat Formation), Borgan Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked); Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhitmuipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Podocarpidites meghalayaensis
Rao. Singh & Tripathi 1990: 329, MIOCENE (Siwalik sediments), Arunachal Pradesh; Kumar & Takahashi 1991: 580, pl 15, fig 16, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 70, 82, 93, pl 36, fig 16, MIOCENE-PLIOCENE (Bhuban, Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Rao & Patnaik 2001: 270, pl 2, fig 10, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

Podocarpidites microreticulatus
Cookson. Singh & Sarkar 1994: 50, pl 1, fig 14, EARLY MIOCENE (Kasauni Formation), Kasauni, Solan District, Himachal Pradesh.

Podocarpidites rajpardiensis
Samant & Phadtare 1997: 14, pl 2, fig 11, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

Podocarpidites sp. Singh & Tripathi 1990: 329, pl 1, fig 27, MIOCENE (Siwalik sediments), Arunachal Pradesh.

Podocarpidites sp. Kumar & Takahashi 1991: 581, pl 14, fig 14, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam.


Podocarpidites sp. Samant 2000: 114, pl 1, fig 15, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.


PODOSPORITES Rao, POLYSACCITES.

Podosporites tripakshi Rao. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Mandaokar 1991: 27, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road, Jaintia Hills District, Meghalaya (Reworked); Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland (Reworked).


Pollens tetrad type A. Kumar 1996: 116, pl 1, fig 20, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

Pollens tetrad type B. Kumar 1996: 116, pl 2, fig 8, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

Pollens tetrad type A. Chandra & Kumar 1998: 67, pl 2, fig 2, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

Pollens tetrad type. Rao 2000: 301, pl 1, fig 8, OLIGOCENE (Kherapara Formation), Tura-Dalu Road near Kherapara, West Garo Hills District, Meghalaya.

Pollens tetrad type A. Rao & Patnai 2001: 280, pl 1, fig 12, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

Pollens tetrad type B. Rao & Patnai 2001: 280, pl 1, fig 17, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

Pollens tetrad. Singh & Kar 2003: 221, pl 2, fig 6, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

Pollens type A. Singh 1990: 226, pl 2, fig 15, PALAEOCENE (Tura Formation), Langrin Coalfield, Khari Hills, Meghalaya.

Pollens type B. Singh 1990: 226, pl 2, fig 9, PALAEOCENE (Tura Formation), Langrin Coalfield, Khari Hills, Meghalaya.
**Pollen type A.** Kumar 1996: 112, pl 1, fig 16, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Pollen type A.** Chandra & Kumar = *Varisculptinaperturites sphericus* Saxena et al.

**Pollen type.** Saxena 2000c: 163, pl 1, figs 18-19, MIocene (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra.

**Pollen type 1.** Tripathi et al. 2000: 248, pl 1, fig 12, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

**Pollen type 1 (cf. Sapotaceoidapollinite).** Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.

**Pollen type 1.** Kumar et al. 2001: 245, EARLY-MIDDLE MIocene (Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam.

**Pollen type 1.** Rao 2004: 125, 132, pl 1, fig 16, MIocene (Sindhudurg Formation), Kalviwadi, Sindhudurg District, Maharashtra.

**POLYADOPOLLENITES** Pflug & Thomson in Thomson & Pflug, POLYADITES.


**Polyadopollenites levis** Sah. Mandal 1997: 99, pl 1, fig 7, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

**Polyadopollenites miocenicus** Ramanujam. Ramanujam et al. 1989: 29, 30, pl 1, fig 16, MIocene, subsurface sediments of eastern coast of southern India; Mandaokar 1993: 139, pl 2, fig 21, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 186, pl 2, fig 36, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1996b: 42, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandal 1997: 100, pl 2, fig 9, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Chandra & Kumar 1998: 66, pl 3, fig 4, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean; Mandaokar 2000b: 181, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002a: 116, EARLY MIocene (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Kumar et al. 2001: 245, fig 5.13, EARLY-MIDDLE MIocene (Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Mandal & Vijaya 2004: 497, LATE OLIGOCENE-EARLY MIocene, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

**Polyadopollenites sahii** Rao et al. Rao 2000: 297, pl 2, fig 10, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

**Polyadopollenites siwalikus** Saxena & Singh. Saxena & Rao 1996: 48, pl 3, figs 5-6, EARLY MIocene (Boldamgiri Formation), Adujgiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Tripathi et al. 2000: 245, pl 2, fig 5, LATE EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

**Polyadopollenites sp.** Kar 1990a: 190, 198, pl 5, fig 86, pl 9, fig 131, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

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Polyadopollenites sp. Saxena & Misra 1990: 265, pl 1, fig 16, NEOGENE (Ratnagiri Beds), Amberiwdi Section, Sindhudurg District, Maharashtra.


Polyadopollenites sp. Mitra et al. 2000: 126, pl 1, fig 2, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

POLYBREVICOLPITES Deb, POLYPTYCHES.


Polybrevicollorites cephalus Venkatachala & Kar. Kar & Bhattacharya 1992: 252, pl 2, figs 5, 8, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Mandaokar 1993: 139, pl 1, fig 6, LATE Oligocene (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Shanmukhappa & Koshal 1993: 195, EARLY EOCENE (Cambay Shale Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Kar et al. 1994: 187, TERTIARY, subsurface sediments in Upper Assam; Misra & Kapoor 1994: 154, pl 3, fig 55, PALAEOCENE-EARLY EOCENE (Subathu and Basal Dharmsala), Jvalamukhi-B Well, northern part of Jvalamukhi Structure, Himalach Pradesh; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarhar-Domra Sector, Burdwan District, West Bengal; Mandaokar 2000b: 183, pl 2, figs 12, 42, 44, 48, 58, 61, LATE Oligocene (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mitra et al. 2000: 126, pl 1, fig 24, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya; Kar & Sharma 2001: 130, pl 5, fig 4, pl 6, fig 4, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Saxena & Khare 2004: 74, pl 1, fig 14, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondachopurapuram Well 12, Tiruchirapalli District, Tamil Nadu.

POLYBREVICOLPORITES Venkatachala & Kar, PTYCHOPOLYPORINES.


Polybrevicollorites reticulata Samant 2000: 104, 106, pl 4, figs 7, 8, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

Polybrevicollorites sp. Singh et al. 1992: 56, pl 1, fig 17, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

POLYCINGULATISPORITES Simoncsics & Kedves, CINGULATI.

Polycingulatisporites reduncus (Bolkhovitina) Venkatachala. Mandal et al. 2003: 102, pl 2, fig
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8, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**Polycingulatisporites sp.** Trivedi 1991: 67, LATE EOCENE (Kopili Formation), 136 km post from Shillong, Jowai-Badarpur Road, Jaintia Hills District, Meghalaya (Reworked).

**Polycingulatisporites sp.** Kumar et al. 2001: 247, fig 5.19, EARLY-MIDDLE MIOCENE (Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam (Reworked).

**Polycingulatisporites** Couper, POLYPTYCHES.

**Polycolpites crassimarginatus** Samant & Phadtare 1997: 42, pl 9, figs 5-6, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.


**Polycolpites ornatius** Dutta & Sah. Samant 1994: 49, EARLY EOCENE (Bhavnagar lignite, Kharsalia Clay Formation), South Cambay Basin, Gujarat; Samant & Phadtare 1997: 42, pl 9, figs 3-4, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Phadtare 1997: 42, pl 9, figs 3-4, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

**Polycolporate pollen type 1.** Rao & Nair 1998: 53, pl 1, fig 18, MIOCENE, Kundra Clay Mine Section, Quilon District, Kerala.

**Polycolporate pollen type 2.** Rao 2000: 301, pl 1, fig 3, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.
POLYCOLPORITES Mehrotra, PTYCHOPOLYPORINES.

Polycolporites indicus Mehrotra. Kar & Sharma 2001: 130, pl 8, fig 5, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.


POLYGALACIDITES Sah & Dutta, PTYCHOPOLYPORINES.


Polygalacidites magnus Samant & Phadtare 1997: 42, pl 9, figs 7-10, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Polygalacidites minutus Samant & Phadtare 1997: 43, pl 9, figs 11-13, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 5, fig 12, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.


Polygalacidites sp. Ramanujam et al. 1991: 3, pl 3, fig 7, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

Polygalacidites sp. Ramanujam et al. 1992: 22, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.


Polygalacidites sp. Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.


POLYGONACIDITES Sah & Dutta. PERIPORITI.

Polygonacidites frequens Sah & Dutta. Hait & Banerjee 1994: 118, pl 3, figs 44-45, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl and around Champhai, Mizoram; Mandal & Kumar 2000: 199, pl 1, figs 1-3, MIO-PLIOCENE (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam; Kumar et al. 2001: 245, figs 5.3-4, EARLY-MIDDLE MIOCENE, MIO-PLIOCENE and PLEISTOCENE (Surma and Tipam groups excluding Girujan Clay
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Formation and Namsang and Dhekiajuli formations), Tinali Well-7, Upper Assam; Rao 2004: 125, pl 1, fig 15, MIOCENE (Sindhudurg Formation), Kalviwadi, Sindhudurg District, Maharashtra.

**Polygonacidites zonoides** Baksi. Hait & Banerjee 1994: 118, pl 3, figs 46-47, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl and around Champhai, Mizoram.

**Polygonacidites sp.** Ramanujam et al. 1991: 57, pl 1, fig 35, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala.

**Polygonacidites sp.** Ramanujam et al. 1991: 3, NEogene, Mynagapalli Borewell, Quilon District, Kerala.

**POLYLONGICOLPORITES** Kar & Sharma, PTYCHOPOLYPORINES.

**Polylongicocolporites retipilatus** Kar & Sharma 2001: 130, 139-140, pl 7, fig 5, pl 8, figs 4, 6, 9, 12, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

**POLYMARGOCOLPORITES** Kar & Kumar, PTYCHOPOLYPORINES.

**Polymargocolporites mawlensis** Kar & Kumar. Singh 1990: 220, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

**POLYPODIAEAESPORITES** Thiergart ex Potonie, LAEVIGATOMONOLETI.

**Polypodiaceaesporites chatterji** Kar. Kar 1990a: 184, pl 42, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 237, 239, EOCENE-EARLY MIOCENE (Disang, Laison, Jenam, Renji and Bhurban formations), Silchar-Haflong Road Section, Assam; Kar & Bhattacharya 1992: 251, EARLY EOCENE, Rajpardi lignite mine, Camby Basin, Gujarat; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao 1996: 157, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendran 1996: 66, MIOCENE, Cannanore District, Kerala; Saxena & Rao 1996: 46, pl 1, fig 21, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 10, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 187, EARLY MIOCENE (Middle Bhurban Formation), Lawngtlai, Chhimtuipui District, Mizoram.


**Polypodiaceaesporites intrapunctatus** Kar & Jain. Rao 1990: 246, pl 1, fig 7, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Mandaokar 1993: 139, pl 2, fig 10, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, pl 1, fig 2, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1995:
19, pl 1, figs 36, 50, pl 2, fig 11, Oligocene, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Kumar et al. 2001: 245, MIOCENE (Surma and Tipam groups), Tiniali Well-7, Upper Assam.

**Polypodiaceaesporites levis** Sah. Kar 1990b: 232, 236, 237, 239, Eocene, Middle Oligocene-Early MIOCENE (Disang, Jenam, Renji and Bhuban formations), Silchar-Hafong Road Section, Assam; Saxena & Misra 1990: 264, Neogene (Ratnagiri Beds), Ameriwadi Section, Sindhudurg District, Maharashtra; Mandaokar 1991: 26, Early MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Salujha et al. 1991: 66, pl 1, fig 25, Neogene, Adamtilla-Well A, Cachar District, Assam; Mandaokar 1993: 139, pl 2, fig 25, Late Oligocene (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, Tertiary, subsurface sediments in Upper Assam; Mandaokar 1995: 21, pl 1, figs 24, 25, pl 2, figs 1, 6, Oligocene, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Mandal et al. 1996: 80, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, Late Oligocene (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandal 1997: 99, pl 1, fig 7, Late Eocene (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Mandaokar 2000a: 320, Early MIOCENE (Bhuban Formation), Ramricknaw near Chandmari, Aizawl District, Mizoram; Rao 1995a: 327, Eocene-Early MIOCENE, Kalarakod and Nirkunnam Boresholes, Alleppey District, Kerala; Mandal 1997: 99, Late Eocene (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Mandaokar 2000a: 320, Early MIOCENE (Bhuban Formation), Ramricknaw near Chandmari, Aizawl District, Mizoram; Rao 2000: 295, Oligocene (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Kar & Sharma 2001: 129, pl 1, fig 1, Late Palaeocene-Early Eocene (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Chakraborty 2004: 115, Late Palaeocene (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

**Polypodiaceaesporites major** Saxena. Mandaokar 1991: 26, Early MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Rao 1995a: 327, Eocene-Early MIOCENE, Kalarakod and Nirkunnam Boresholes, Alleppey District, Kerala; Mandal 1997: 99, Late Eocene (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Mandaokar 2000a: 320, Early MIOCENE (Bhuban Formation), Ramricknaw near Chandmari, Aizawl District, Mizoram; Rao 2000: 295, Oligocene (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Kar & Sharma 2001: 129, pl 1, fig 1, Late Palaeocene-Early Eocene (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Chakraborty 2004: 115, Late Palaeocene (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

**Polypodiaceaesporites meghalayaensis** Singh et al. (non Saxena 1978) = **Polypodiaceaesporites meghalayaensis** Saxena.

**Polypodiaceaesporites meghalayaensis** Saxena 1992b: 532.

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**Polypodiaceaesporites meghalayaensis** Saxena 1992b: 532.
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EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin.

Polypodiaceoesporites tertiarus Sah & Dutta = Laevigatosporites tertiarus (Sah & Dutta) Saxena & Khar.

Polypodiaceoesporites sp. A. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Bor, Gojalia Bor and Baramura Bor, Tripura.

Polypodiaceoesporites sp. K Kar 1990b: 232, EARLY EOCENE (Disang Formation), Silchar-Haflong Road Section, Assam.

Polypodiaceoesporites spp. Kumar 1994: 53, 74, 86, 95, 100, pl 35, fig 13, pl 45, fig 2, MIOCENE-PLIOCENE (Bhuban, Bokabil, Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam.

Polypodiaceoesporites sp. Kar & Bhattacharya 1992: 257, pl 2, fig 31, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.

Polypodiaceoesporites sp. Kar 1990b: 232, EARLY EOCENE (Disang Formation), Silchar-Haflong Road Section, Assam.

Polypodiaceoesporites sp. Mandal et al. 2003: 102, pl 1, fig 10, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

Polypodiaceoesporites sp. Dutta et al. 1998: 64, pl 1, fig 4, EARLY CRETACEOUS-LATE EOCENE-OLIGOCENE (Upper Disang-Lower Barail groups), Kohima District, Nagaland.

Polypodiaceoesporites sp. Kumar et al. 2000: 323, pl 1, fig 1, NEOGENE, Mahuadani Valley, Palamu District, Jharkhand.

Polypodiaceoesporites sp. Mandal et al. 2003: 102, pl 1, fig 10, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

Polypodiaceoesporites sp. Kumar et al. 2000: 323, pl 1, fig 1, NEOGENE, Mahuadani Valley, Palamu District, Jharkhand.

Polypodiaceoesporites sp. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Bor, Gojalia Bor and Baramura Bor, Tripura.

Polypodiaceoesporites sp. K Kar 1990b: 232, EARLY EOCENE (Disang Formation), Silchar-Haflong Road Section, Assam.

Polypodiaceoesporites spp. Kumar 1994: 53, 74, 86, 95, 100, pl 35, fig 13, pl 45, fig 2, MIOCENE-PLIOCENE (Bhuban, Bokabil, Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam.

Polypodiaceoesporites sp. Kar & Bhattacharya 1992: 257, pl 2, fig 31, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.

Polypodiaceoesporites sp. Kumar 1994: 63, pl 29, figs 7, 11, 15, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam.

Polypodiaceoesporites sp. Sarkar et al. 1994: 201, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.


Polypodiaceoesporites sp. Dutta et al. 1998: 64, pl 1, fig 4, EARLY CRETACEOUS-LATE EOCENE-OLIGOCENE (Upper Disang-Lower Barail groups), Kohima District, Nagaland.

Polypodiaceoisporites sp. Kumar & Takahashi 1991: 598, pl 9, fig 6, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam.


Polypodiaceoisporites sp. Banerjee & Nandi 1994: 216, pl 1, fig 7, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram.

Polypodiaceoisporites spp. Kumar 1994: 39, 53, pl 9, fig 8, pl 25, fig 1, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Polypodiisporites favus (Potonié) ex Potonié. Kumar 1994: 63, 74, 86, 100, pl 40, fig 1, MIOCENE-PLIOCENE (Bhuban, Bokabil and Dupitila formations), Silchar-Haflong Road Section, Assam; Rao 1995a: 327, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Rao & Rajendran 1996: 66, MIOCENE, Cannanore District, Kerala; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramriakwn near Chandmari, Aizawl District, Mizoram.

Polypodiisporites formosus Salujha et al. Salujha et al. 1991: 66, pl 1, figs 21-22, NEOGENE, Adamtila Well-A, Cachar District, Assam; Shanmukhappa & Koshal 1993: 202, LATE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin; Mandaokar 1995: 19, pl 1, figs 4, 11, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Polypodiisporites gemmatus Nagy. Kumar 1994: 86, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Polypodiisporites grandis Sah. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 1995: 21, 23, Pl 2, fig 7, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam.
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**Polyodiisporites impariter** (Potonié & Sah) Dutta & Sah. Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 81, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandal 1997: 99, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Kumar et al. 2001: 245, MIOCENE (Surma and Tipam groups), Tinali Well-7, Upper Assam; Mandal et al. 2003: 102, pl 1, fig 12, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

**Polyodiisporites inangahuensis** (Couper) Nagy. Kumar 1994: 86, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

**Polyodiisporites mawkmaensis** Dutta & Sah = Polyodiisporonites mawkmaensis (Dutta & Sah) Mathur & Chopra.

**Polyodiisporites megafavus** (Krutzsch) Nagy. Kumar 1994: 63, 74, pl 29, figs 4, 8, pl 34, fig 10, pl 38, fig 3, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Polyodiisporites minor** Sah. Mandaokar 1995: 23, pl 1, figs 2, 10, 22, pl 2, fig 9, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Samant & Phadtar 2002: 180, pl 1, fig 12, LATE OLIGOCENE (Tikak Parbat Formation), Dilly-Jeypore Colliery, Dilly-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, pl 1, fig 12, LATE OLIGOCENE (Tikak Parbat Formation), Dilly-Jeypore Colliery, Dilly-Jeypore Coalfields, Dibrugarh District, Assam; Kumar et al. 2001: 244, fig 6.3, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmasala and Siwallik), Dharmasala and Nurpur areas, Kangra District, Himachal Pradesh; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhurban Formation), Lawngtlai, Chhimtuipui District, Mizoram.

**Polyodiisporites oligocenicus** Sah & Dutta. Kumar & Takahashi 1991: 598, pl 3, fig 4, pl 7, fig 11, MIDDLE OLIGOCENE and EARLY MIOCENE (Jenam and Lower Bhuban formations), Silchar-Haflong Road Section, Assam; Saluja et al. 1991: 66, pl 1, fig 23, NEOGENE, Adami-tla Well-A, Cachar District, Assam; Handique et al. 1992: 219, OLIGOCENE (Barail Group), Moran Oilfield, Upper Assam; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Collier, Dibrugarh District, Assam; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilly-Jeypore Colliery, Dilly-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, pl 1, fig 12, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilly-Jeypore Coalfields, Dibrugarh District, Assam; Kumar et al. 2001: 244, fig 6.3, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmasala and Siwallik), Dharmasala and Nurpur areas, Kangra District, Himachal Pradesh; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhurban Formation), Lawngtlai, Chhimtuipui District, Mizoram.
Polypodiisporites ornatus Sah. Kar 1990a: 176, pl 2, figs 38-40. MIOCENE (Surma and Tipam groups), Rukhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 236, 240. MIDDLE OLIGOCENE and EARLY MIOCENE (Mayyanad and Quilon formations), Silchar-Haflong Road Section, Assam; Saxena & Misra 1990: 264. NEogene (Ratnapuri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra; Ramanujam et al. 1991: 53, EARLY MIOCENE, Alappuzha District, Kerala. 

Polypodiisporites perverrucatus (Couper) Khan & Martin. Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 1, figs 13-14. NEogene, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Rao et al. 1993: 81, pl 1, fgs 6-7. EARLY MIOCENE, Thakazhi Borewell, Alleppey District, Kerala; Banerjee & Nandi 1994: 219, pl 1, fig 17, EARLY-MIDDLE MIOCENE (Middle Bhaban Formation), near Kolaisib, Aizawl District, Mizoram; Kar et al. 1994: 185, pl 1, fig 3, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 21, 39, 63, 101, pl 2, fig 10, pl 11, fig 5, pl 12, fig 9, pl 27, fgs 5, 11, pl 29, fig 2. EARLY-MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Laisong, Jenam, Bhutan and Duptila formations), Silchar-Haflong Road Section, Assam; Sarkar et al. 1994: 201, pl 1, fig 3, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Mandaokar 1995: 24, pl 1, figs 27, 42-43, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Rao et al. 1995: 372, fig 13, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dillijeyapore Colliery, Dillijeyapore Coalfields, Dibrugarh District, Assam; Rao & Rajendran 1996: 66, pl 1, fig 12. MIOCENE, Cannanore District, Kerala; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeyapore Colliery, Dillijeyapore Coalfields, Dibrugarh District, Assam; Tripathi et al. 2000: 243. EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, pl 1, fig 8. LATE EOCENE (Kopili Formation), Umrohso-Haflong Road near Umrohso, North Cachar Hills District, Assam; Mandaokar 2002c: 79. EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2004: 146. LATE MIOCENE (Upper Bhutan Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Polypodiidites perverrucatus Couper. Kumar & Takahashi 1991: 598-599, pl 2, fig 2, pl 3, fig 9, pl 6, fig 2. OLIGOCENE (Laisong, Jenam and Renji formations), Silchar-Haflong Road Section, Assam.


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PLIOCENE (Jenam, Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam; Rao et al. 1995: 372, fig 12, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala; Samant & Phadate 1997: 12, pl 2, figs 1-2, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 1, fig 8, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 126, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Polypodiisporites repandus Takahashi =
Polypodiisporonites repandus (Takahashi) Saxena & Khare

Polypodiisporites speciosus Sah & Dutta =
Polypodiisporites speciosus (Sah & Dutta) Kumar & Takahashi.

Polypodiisporites splendidus Salujha et al. Trivedi & Saxena 2000: 273, pl 1, fig 7, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.

Polypodiisporites tertiarus in Singh & Sarkar 1994: 50, pl 1, fig 5, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Mandal 1997: 100, pl 1, fig 9, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland. Nomen nudum.


Polypodiisporites turbinatus Sah. Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Mandaokar 1995: 25, pl 1, figs 8, 21, pl 3, fig 3, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Mandal 1997: 99, pl 1, fig 4, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.


Polypodiisporites usmensis (Germeraad et al.) Khan & Martin. Ramanujam et al. 1991: 3, pl 1, figs 11-12, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Kumar 1994: 39, 63, 74, 86, 95, 101, pl 11, fig 2, pl 45, fig 15, MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Jenam, Bhuban, Bokabil, Tipam and Dupitila formations), Silchar-Haflong Road Section, Assam.

Polypodiisporites sp. Saxena & Misra 1990: 264, pl 1, fig 4, NEOGENE (Ratnagiri Beds), Amberiwasdi Section, Sindhudurg District, Maharashtra.

Polypodiisporites sp. Singh et al. 1992: 56, pl 1, fig 4, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.


Polypodiisporites sp. Saxena & Kapoor 1994: 150, MIDDLE MIOCENE-EARLY PLIOCENE (Middle
Siwalik), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh.

**Polypodiisporites sp.** Kumaran et al. 1995: 1024, fig 4t, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines, Kerala.

**Polypodiisporites sp.** Mandaokar 1995: 25, pl 1, figs 7, 41, 45, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam.

**Polypodiisporites sp.** Kumar 1996: 112, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Polypodiisporites sp.** Misra et al. 1996: 96, OLIGOCENE and EARLY MIOCENE (Simsang and Baghmara formations), Tura-Dalu Road Section near Kherapara and along Bugi River and in the vicinity of Baghmara, Garo Hills, Meghalaya.

**Polypodiisporites sp.** Mandal 1997: 100, pl 1, fig 13, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

**Polypodiisporites sp.** Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

**Polypodiisporites sp.** Mehrrota et al. 2000: 153, LATE EOCENE (Kopili Formation), Upper Assam.

**Polypodiisporites sp.** Rao 2000: 299, pl 1, fig 2, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

**Polypodiisporites Handique et al. 1992: 222, PLIOCENE (Dhekiajuli Formation), Moran Oilfield, Upper Assam.

**Polypodiisporites sp.** Mandal & Vijaya 2004: 497, LATE OLIGOCENE-EARLY MIOCENE, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

**Polypodiisporonites Potonié, SCULPTATOMONOLETI.**


**Polypodiisporonites mawkmaensis** Dutta & Sah. Singh 1990: 219, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Shanmukhappa & Koshal 1993: 202, LATE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Misra & Kapoor 1994: 159, PALAEOCENE-EARLY EOCENE (Subathu and Basal Dharmsala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh; Mandaokar 1995: 23-24, pl 1, figs 5, 16, 19, 23, 25, 40, pl 3, fig 6, OLIGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, pl 1, fig 9, LATE EOCENE (Kopili Formation), Umronso-Haflong Road near Umronso, North Cachar Hills District, Assam; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Kumar et al. 2001: 245, MIOCENE (Surma and Tipam groups), Tinali Well-7, Upper Assam; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam; Saxena & Khare 2004: 73, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirappalli District, Tamil Nadu.
**Polypodiisporites multiverrucatus** Nagy, Kumar et al. 2004: 158, pl 1, fig 4, NEOGENE and PLEISTOCENE, Site 218, Deep Sea Drilling Project Leg 22, Bengal Fan, Indian Ocean.

**Polypodiisporonites repandus** (Takahashi) Saxena & Khare 2004: 73, 77, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Polypodiisporites repandus** Takahashi. Kar 1990b: 232, 233, 236, 240, EOCENE-EARLY MIOCENE (Disang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinahat, Khasi Hills, Meghalaya; Saxena & Misra 1990: 264, NEOGENE (Rate nagiri Beds, Amberwadi Section, Sindhudurg District, Maharashtra; Mandaokar 1993: 139, LATE Oligocene (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1995: 24, pl 1, figs 12, 14, pl 2, fig 5, pl 3, figs 4-5, Oligocene, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Kumar 1996: 112, pl 2, fig 1, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Mandal et al. 1996: 80, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, LATE Oligocene (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandal 1997: 99, pl 1, fig 29, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Chandra & Kumar 1998: 65, pl 3, fig 2, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000b: 180, pl 1, fig 22, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 6, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Chakraborty 2004: 115, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

**Polypodiisporonites sp.** Saxena & Khare 2004: 73, 77, pl 1, fig 10, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**POLYPORINA** Naumova ex Potonié, PERIPORITI.

**Polyporina globosa** Sah. Saluja et al. 1991: 67, pl 2, fig 55, NEOGENE, Adamtilla Well-A, Cachar District, Assam; Banerjee & Nandi 1994: 219, pl 1, fig 28, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Hai & Banerjee 1994: 118, pl 3, fig 58, EARLY MIOCENE, near Suangpuiaw village about 20 km northeast of Aizawl, Mizoram; Singh & Sarkar 1994: 50, pl 1, fig 2, EARLY MIOCENE (Kasauali Formation), Kasauali, Solan District, Himachal Pradesh; Rao & Nair 1998: 53, pl 1, fig 14, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala; Mehrrota et al. 2000: 153, LATE EOCENE (Sylhet Formation), Upper Assam; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifong Road, Aizawl District, Mizoram; Mandaokar 2002c: 79, EARLY MIOCENE (Keifong Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

**Polyporina magna** Sah. Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmasala and Siwalik), Dharmasala and Nurpur areas, Kangra District, Himachal Pradesh.
Polyoporina microreticulata Saluja & Kindra (non Saluja et al. 1979) = Polyoporina salujhae Saxena.

Polyoporina multiporosa Kar. Kar 1990a: 178, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Rao 1990: 248, pl 3, fig 1, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Kar et al. 1994: 187, pl 1, fig 12, TERTIARY, subsurface sediments in Upper Assam; Rao 1995a: 327, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Rao & Nair 1998: 53, MIOCENE, Kallanellur-Kundra Road area, Quilon District, Kerala; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000c: 38, pl 1, fig 4, LATE Oligocene (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 297, pl 2, fig 14, Oligocene (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Mandaokar 2002c: 79, EARLY MIOCENE and EARLY EOCENE, Ganga Basin, Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram.


Polyoporina microreticulata Saluja & Kindra 1981 (non Saluja et al. 1979): 50, pl 1, fig 1, Oligocene (Langpar Formation), Umsohryngkew and Umiew River Sections, Khasi Hills, Meghalaya.

Polyoporina sp. Kumar 1994: 32, pl 20, fig 1, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

POLYVESTIBULOPOLLENITES Pflug in Thomson & Pflug, POLYPORINES.

Polyvestibulopollenites assamicus Kumar & Takahashi 1991: 559-560, pl 5, fig 10, pl 8, fig 4, pl 12, fig 3, pl 15, figs 14-15, text-fig 7, MIDDLE OLIGOCENE and EARLY, MIDDLE and EARLY LATE MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 51, 60, 70, 82, 93, pl 24, fig 3, pl 33, figs 17, 19, pl 38, figs 9, 12, pl 46, figs 12, 16, MIOCENE-PLIOCENE (Bhuban, Bakabil and Tipam formations), Silchar-Haflong Road Section, Assam.


POMETIAPOLLENITES Samant, PYCHO-TRIPORINES.

Pometiapollenites reticulatus Samant 2000: 106, pl 5, fig 4, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

POTAMOGETONACEAE PPTAMOGETONACEAE.

Potamogetonaceaepites Biswas, POTAMOGETONACEAE.

Potamogetonaceaepites spp. Kumar 1994: 32, 51, pl 20, fig 12, pl 24, fig 15, pl 26, fig 7, MIDDLE OLIGOCENE and MIDDLE MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam.

POTAMOGETONACIDITES Sah, POTAMOGETONACEAE.

Potamogetonacidites sp. Kumar & Takahashi 1991: 560, pl 4, fig 9, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

Potamogetonacidites sp. Kumar 1994: 46, pl 23, figs 10, 21, LATE OLIGOCENE (Renji Formations), Silchar-Haflong Road Section, Assam.

Potonieisporites Bharadwaj, VESICULOMONORADITI.

Potonieisporites granulatus Bose & Kar. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Bor Gehole No. 1, Gojalia Bor Gehole No. 1 and Baramura Bor Gehole No. 2, Tripura (Reworked).

Potonieisporites sp. Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

Prectenolophonidites distinctus in Phadtare & Samant 1996: 673, pl 1, figs 10-12, pl 2, figs 1-7, EARLY EOCENE (Rajpardi lignite), Rajpardi, Bharuch District, Gujarat. Nomen nudum.


Prectenolophonidites primitiva in Phadtare & Samant 1996: 673, pl 1, figs 3-9, EARLY EOCENE (Rajpardi lignite), Rajpardi, Bharuch District, Gujarat. Nomen nudum.

Prectenolophonidites primitiva Samant & Phadtare 1997: 44, pl 9, figs 14-17, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Pretricolpipollenites sp. Srivastava & Bhattacharyya 2000: 375, pl 3, fig 11, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

Primuspollenites Tiwari, STRIARETICULOIDITI.


Proteacidites exceractus Dutta & Sah. Mandal 1990: 326, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya.

Proteacidites protrudus Sah & Kar. Kar 1990a: 178, MIOCENE (Surma and Tipam groups), Rokhia Bor Gehole No. 1, Gojalia Bor Gehole No. 1 and Baramura Bor Gehole No. 2, Tripura; Saxena 1991: 369, fig 6, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Kar & Bhattacharyya 1992: 252, pl 1, fig 8, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Saxena 1995: 99, fig 27, MIOCENE (Mayyanad Formation), Kundra Clay Mines,


PROXAPERTITES van der Hammen, SPHAEROZONISULCATES.

Proxapertites assamicus (Sah & Dutta) Singh. Singh 1990: 219, pl 1, fig 10, PALAEOGENE (Tura Formation), Langin Coalfield, Khasi Hills, Meghalaya; Singh & Tripathi 1990: 329, pl 1, fig 25, MIOCENE (Siwalik sediments), Arunachal Pradesh; Mandaokar 1993: 139, pl 1, fig 33, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kumar et al. 1994: 206, PALAEOGENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Misra & Kapoor 1994: 153, 155, 159, PALAEOGENE-EARLY EOCENE, MIDDLE EOCENE and LATE EOCENE-OLIGOCENE (Subatham and Basal Dharmasala and Lower Dharmasala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh; Tripathi 1995: 47, PALAEOGENE-EARLY EOCENE, surface sediments near Kapurdi, Barmer District, Rajasthan; Kumar 1996: 112, pl 1, fig 28, EOCENE (Tarakeswar Formation), Rajpardi, Bharuch District, Gujarat; Mandal et al. 1996: 80, LATE PALAEOGENE-EARLY EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Saxena et al. 1996: 21, pl 3, fig 3, PALAEOGENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Kapoor et al. 1997: 33, fig 2h, PALAEOGENE-EOCENE (Subatham Formation), Kalka-Kasauli Road, Solan District, Himachal Pradesh; Tripathi 1997: 170, LATE PALAEOGENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer Dis-
trict, Rajasthan; Aswal & Singh 2000: 123, EARLY EOCENE, Saripalli Well-A, Krishna-Godavari Basin, Andhra Pradesh; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Mandal 1997: 99, pl 2, fig 5, LATE EOCENE (Barail Group), Mariani-Mokokchimp Road, Mokokchung District, Nagaland; Samant & Phadtare 1997: 47, pl 10, figs 5-6, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Ramanujam et al. 1999: 35, pl 2, fig 34, MIocene, South Arcot and Thanjavur districts, Tamil Nadu; Aswal & Singh 2000: 122, DANIAN, Saripalli Well-A, Krishna-Godavari Basin, Andhra Pradesh; Mehrotra et al. 2000: 153, PALAEOCENE-MIDDLE EOCENE (Basal Sandstone and Sylhet formations), Upper Assam; Pundeer & Mehrotra 2000: 141, THANETIAN-PYRESIAN (Basal Sandstone), Upper Assam Shelf; Samant 2000: 114, pl 5, fig 1, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Sharma 2000: 52, pl 1, fig 1, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan; Kar & Sharma 2001: 129, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Samant & Tapaswi 2001: 128, pl 2, fig 9, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aki Formation), Barmer Basin, Rajasthan; Chakraborty 2004: 115, pl 1, fig 2, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.


Proxapertites emendatus (Sah & Dutta) Kar & Kumar. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 219, pl 1, fig 13, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Ambwani 1993: 160, PALAEOCENE-
EARLY EOCENE, Seam Nos. 1, 2 and 3, Rekmanigiri Coalfield, Garo Hills, Meghalaya; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Rao & Rajendra 1996: 66, MIOCENE, Cannanore District, Kerala; Chakraborty 2004: 115, pl 1, fig 15, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.


Proxapertites microreticulatus Jain et al. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Saxena & Misra 1990: 265, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra (Reworked); Kar & Bhattacharya 1992: 251, EARLY EOCENE, Guja Dam Section and Akri lignite, Kutch District, Gujarat; Kar et al. 1994: 187, pl 2, fig 29, TERTIARY, subsurface sediments in Upper Assam; Tripathi 1995: 47, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramri kawn near Chandmari, Aizawl District, Mizoram; Kumar et al. 2001: 244, 245, fig 6.4, OLIGOCENE and EARLY-MIDDLE MIOCENE (Barail Group and Surma and Tipam groups excluding Giru jan Clay Formation), Tinali Well-7, Upper Assam; Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin; Saxena & Khare 2004: 75, LATE PALAEOCENE-MIDDLE EOCENE, Sagara Dam Section and Akri lignite, Kutch District, Gujarat.}


Proxapertites reticulatus (Kar & Saxena) Kar. Kar & Bhattacharya 1992: 251, EARLY EOCENE, Guja Dam Section and Akri lignite, Kutch Dis-

Proxapertites sp. Saxena & Misra 1990: 265, pl 1, fig 12, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra.

Proxapertites sp. Kumar 1994: 77, EARLY-MIDDLE EOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.


PSEUDONOTHOFAGIDITES Venkatachala & Kar = GANGAPOLLENITES Mathur & Chopra, STEPHANOPORITI.

Pseudonothofagidites bengalensis (Mathur & Chopra) Samant & Phadatre 1997: 48, pl 10, figs 11-14, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 6, fig 1, EARLY EOCENE (Khar salia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 129, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Gangapollenites bengalensis Mathur & Chopra 1987: 127, pl 5, fig 93, EARLY EOCENE, K-1 Well, Bengal Basin, West Bengal.


Pseudonothofagidites microreticulatus Samant & Tapaswi 2001: 126, pl 2, fig 8, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.


Pseudonothofagidites sp. Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.

Pseudonyssapollenites kutchensis (Venkatachala & Kar) Kar, 1990a: 178, MIOCENE (Surma and Tipam groups), Rokhia Bor, Behore No. 1, Gojalia Bor, Behore No. 1 and Baramura Bor, Behore No. 2, Tripura; Saxena 1991: 369, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Kar & Bhattacharya 1992: 252, pl 2, fig 9, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Saxena 1995: 99, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala (Reworked); Mandal et al. 1996: 80, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands.


Psiladiporocolpites Kar, 1995b: 383, pl 1, figs 7-10, 16-17, EARLY EOCENE (Palana Formation), Borehole core no. K 12 (Depth 134 m), around Kuchaur-Benia area, Bikaner District, Rajasthan; Kar & Sharma 2001: 129, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

Psiladiporocolpites. Sharma 2000: 54, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan.

Psilalacicites Kar, LAEVIGATI.

Psilalacites. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

Psilaplicatus triangulus Bose & Kar. Kar 1990b: 239, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

Psilastephanocolpites Leidelmeyer, POLYPTYCHES.

Psilastephanocolpites elongatus Kumar & Takahashi 1991: 560-561, pl 1, fig 13, pl 2, fig 8, pl 17, fig 12, text-fig 8, EARLY OLIGOCENE and LATE LATE MIOCENE (Laisong and Bokabil formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 18-19, 32, pl 4, fig 17-18, pl 5, fig 5, pl 18, fig 8, EARLY-MIDDLE OLIGOCENE (Laisong and Jenam formations), Silchar-Haflong Road Section, Assam.

Psilastephanocolpites minutus Kumar & Takahashi 1991: 561, pl 18, fig 2, text-fig 9, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 46, 83, 98, pl 17, figs 7, 12, pl 19, figs 6, 11, 16, pl 23, fig 17, pl 44, fig 21, pl 50, fig 5, MIDDLE-LATE OLIGOCENE and LATE MIOCENE-Pliocene (Jenam, Renji, Bokabil and Dupitila formations), Silchar-Haflong Road Section, Assam [Junior homonym of Psilastephanocolpites minutus (Saluja et al.) Saxena 1982].


Psilastephanocolpites quadrangularis Saxena & Khare 2004: 75, 82, pl 1, fig 21, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Psilastephanocolpites rotatus (Kar & Bhattacharya) Samant & Phadtare 1997: 49, pl 10, figs 15-17, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

Laevigatopolycopites rotatus Kar & Bhattacharya 1992: 256, pl 1, figs 7, 16-17, 22, 27, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Kumar 1996: 112, pl 2, figs 5, 7, 21, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

Psilastephanocolpites terminaliaformis (Biswas) Saxena. Kumar & Takahashi 1991: 561-562, pl 5, fig 6, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 33, pl 19, fig 19, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

cf. Psilastephanocolpites terminaliaformis (Biswas) Saxena. Kumar 1994: 83, pl 44, fig 26, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Psilastephanocolpites sp A. Kumar & Takahashi 1991: 562, pl 2, fig 12, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

Psilastephanocolpites sp B. Kumar & Takahashi 1991: 562-563, pl 5, fig 7, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

Psilastephanocolpites sp. Kar & Bhattacharya 1992: 257-258, pl 1, fig 13, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.

Psilastephanocolpites spp. Kumar 1994: 19, 33, 60, 93, pl 4, fig 15, pl 5, fig 8, pl 19, figs 1, 8, 18, EARLY-MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Laisong, Jenam, Bhuban and Tipam formations), Silchar-Haflong Road Section, Assam.

cf. Psilastephanocolpites spp. Kumar 1994: 98, pl 5, fig 7, pl 50, fig 3, EARLY OLIGOCENE and LATE MIOCENE-PLIOCENE (Laisong and Dupitila formations), Silchar-Haflong Road Section, Assam.

Psilastephanocolpites sp. Saxena 2000c: 163, pl 1, fig 16, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra.

PSILASTEPHANOCOLPORITES Leidelmeyer, PTYCHOPOLYPORINES.

Psilastephanocolpores psilatus Kar & Kumar. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 220, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Ambwani 1993: 160, PALAEOCENE-EARLY EOCENE, Seam Nos. 2 and 3, Rekmangiri Coalfield, Garo Hills, Meghalaya; Tripathi 1995: 47, pl 1, fig 10, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan.

PSILATRICOLPORITES van der Hammen ex Pierce, PTYCHOTRIPORINES.


Psilatricolporites operculatus van der Hammen & Wijmstra. Ramanujam et al. 1991: 54, EARLY...
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MIOCENE, Pattanakad Borewell, Alleppey District, Kerala.

**Psilatricolporites sagittatus** Samant & Phadtare 1997: 49, pl 10, fig 18, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 5, fig 7, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapasi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

**Psilatricolporites sahii** Saxena & Kharak 2004: 75, 82, pl 2, fig 5, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Psilatricolporites sp.** Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.

**PSILDIPORITES** Varma & Rawat, DIPORINES.


**Psilodiporites sp.** Rao & Rajendran 1996: 73, pl 2, fig 9, MIOCENE (Quilon Formation), Meenkunnu Phase I, Cannanore District, Kerala.

**Psilodiporites sp. a.** Samant 2000: 106, 108, pl 5, fig 10, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

**Psilodiporites sp. b.** Samant 2000: 108, pl 5, fig 9, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

**Psilodiporites sp.** Rao & Patnaik 2001: 277, pl 3, fig 11, LATE PLIOCENE (Pinjor Formation), Nadad, Panchkula, Haryana.

**PSILOSCHIZOSPORIS** Jain, MONOPTYCHES.

**Psiloschizosporis psilata** Kar & Saxena. Kar 1990a: 176, pl 7, figs 106-108, pl 9, fig 135, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 236, 237, 240, EOCENE, MIDDLE OLIGOCENE-EARLY MIOCENE (Disang, Jenam, Renji and Bhuban formations), Silchar-Hailong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member,
Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Mandal et al. 1996: 80, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Rao 1996: 157, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Kumar et al. 2001: 244, 245, OLIGOCENE and EARLY-MIDDLE MIOCENE (Barail Group and Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam.

_Psischizosporis punctata_ Kar & Saxena. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Gupta et al. 2003: 211, pl 1, fig 7, PALAEOCENE-EOCENE, Ganga Basin.

_Psischizosporis scabrat us_ Kar. Kar 1990a: 181, pl 7, figs 101-105, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

_Psischizosporis sp._ Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

_Psischizosporis sp._ Dutta et al. 1998: 64, pl 1, fig 3, EARLY CRETACEOUS-LATE EOCENE-OLIGOCENE (Upper Disang-Lower Barail groups), Kohima District, Nagaland.


**PTERIDACIDITES** Sah, _CINGULATI_.


_Pteridacites chandigarhensis_ Rao & Patnaik 2001: 274, 275, pl 1, figs 3-4, LATE PLIOCENE (Pinjor Formation), Nadah, Panchkula, Haryana.


_Pteridacites fistulosus_ Sah. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 239, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam; Saxena & Misra 1990: 264, pl 3, fig 6, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Kumar et al. 2001: 245, LATE MIOCENE and MIO-PLIOCENE (Girujan Clay and Namsang formations), Tinali Well-7, Upper Assam.

_Pteridacites frequens_ in Kumar et al. 2001: 245, PLEISTOCENE (Dhekiajuli Formation), Tinali Well-7, Upper Assam. _Nomen nudum._

_Pteridacites meghalayaensis_ Kar & Kumar. Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Chakraborty 2004: 115, pl 1, fig 16, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

_Pteridacites minor_ Kumar 1994: 74, pl 35, fig 11, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

_Pteridacites robustus_ Kar & Kumar. Singh 1990: 219, PALAEOCENE (Tura Formation), Langrin
Pteridacidites rotundus Sah. Kumar 1994: 101, pl 48, figs 1, 4, LATE MIOCENE - PLIOCENE (Dupitila Formation), Silchar-Haflong Road Section, Assam; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Pteridacidites sahii Rao & Ramanujam. Saxena 2000c: 163, pl 1, figs 4-5, NEOGENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra.

Pteridacidites triangulatus Sah. Ramanujam et al. 1991: 2, pl 1, figs 4-5, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Rao et al. 1993: 81, pl 1, fig 4, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Banerjee & Nandi 1994: 219, pl 1, fig 3, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Rao et al. 1995: 372, figs 6-7, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 2, pl 2, fig 10, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Mandaokar 2002b: 21, pl 1, fig 10, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhitmuipi District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Pteridacidites verrucatus Salujha et al. Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Rao et al. 1994: 185, pl 2, fig 8, TERTIARY, subsurface sediments in Upper Assam; Rao 1995a: 327, pl 1, fig 8, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 12, pl 2, fig 10, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Mandaokar 2002b: 21, pl 1, fig 10, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhitmuipi District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Pteridacidites verrucatus Salujha et al. Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (wrongly spelt as Pteridacidites verrucatus); Salujha et al. 1991: 65, pl 1, fig 17, NEOGENE, Adamtila Well-A, Cachar District, Assam.

Pteridacidites sp. Singh & Tripathi 1990: 329, pl 1, fig 5, MIOCENE (Siwalik sediments), Arunachal Pradesh.

?Pteridacidites sp. Kumar & Takahashi 1991: 599-600, pl 14, fig 9, EARLY LATE MIOCENE.
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(Pteridacidites sp. Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.


Pteridacidites sp. Kar et al. 1994: 185, pl 1, fig 17, TERTIARY, subsurface sediments in Upper Assam.


Pteridacidites sp. Mandal et al. 1996: 78, pl 1, fig 27, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands.

Pteridacidites sp. Saxena & Rao 1996: 50, pl 1, fig 13, EARLY MIOCENE (Boldamgiri Formation), Adugini-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.

Pteridacidites sp. Chandra & Kumar 1998: 64, pl 2, fig 1, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

Pteridacidites sp. Mandaokar 2000c: 43, pl 2, fig 11, LATE Oligocene (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh.


Pteridacidites. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

Pteridophytic spore 1. Rao & Rajendran 1996: 67, pl 1, fig 3, MIOCENE (Quilon Formation), Meenkunnu Phase 1, Cannanore District, Kerala.


PUNCTATISPORITES Ibrahim, LAEVIGATI. Punctatisporites sp. Trivedi & Saxena 2000: 273, LATE EOCENE (Kopili Formation), Umrgong-Haflong Road near Umrgong, North Cachar Hills District, Assam.

QUERCOIPOLLENITES Potonié, TRIPTYCHES. Quercoipollenites sp. Hait & Banerjee 1994: 115, pl 1, fig 12, EARLY MIOCENE, around Champhai, Mizoram.


Quilonipollenites ornatus Rao & Ramanujam. Saxena & Misra 1990: 265, NEOGENE (Ratnagiri Beds), Amberiwasdi Section, Sindhudurg District, Maharashtra; Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 2, fig 3, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Saxena 1991: 369, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Ramanujam et al. 1992: 21, fig 2F, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 81, EARLY MIOCENE, Thakkazhi...

**Quilonipollenites reticulatus** Samant & Phadtare 1997: 50, pl 11, figs 1-2, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

**Quilonipollenites sahnii** Rao & Ramanujam. Rao 1990: 246, pl 1, fig 16, pl 2, fig 22, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Ramanujam et al. 1991: 53, pl 1, figs 7-9, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 2, fig 2, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 21, fig 2G, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao 1995a: 327, pl 2, fig 3, EOCENE-EARLY MIOCENE, Kalarakod and Nirkunnam Boreholes, Alleppey District, Kerala; Rao 1996: 157, pl 1, fig 2, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendran 1996: 66, pl 1, fig 15, MIOCENE, Cannanore District, Kerala; Rao & Nair 1998: 52, pl 1, fig 11, MIOCENE, Kananellur-Kundra Road area, Quilon District, Kerala; Ramanujam et al. 1998c: 55, fig 2, MIOCENE, borewell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh.


**Quilonipollenites sp.** Saxena & Misra 1990: 265, pl 1, fig 9, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra.

**Quilonipollenites sp.** Kumaran et al. 1995: 1026, fig 4h, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines, Kerala.

**Quilonipollenites sp.** Ramanujam et al. 1998c: 55, fig 2, MIOCENE, borewell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh.

**Quilonipollenites sp.** Saxena 2000c: 163, pl 1, fig 15, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra.

**RACEMONOCOLPITES** González Guzmán, MONOPTYCIES.

**Racemonocolpites bhavnagarensis** Samant 2000: 108, pl 5, fig 13, EARLY EOCENE (Khar-salia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.


**Racemonocolpites thanjinathensis** Mandal 1990: 326, pl 1, figs 5-10, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Chakraborty 2004: 115, pl 1, fig 10, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

**Racemonocolpites trichotomosulcatus** Mandal 1990: 326, pl 1, figs 1-4, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya.
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Racemonocolpites sp. Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam.

Racemonocolpites sp. Mandal 1997: 100, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

RADIIZONA Stål & Jansonius, ZONATI.


RAISTRICKIA Schopf et al., APICULATI.


RATARIACOLPORITES PTYCHOTRIPORINES. Kar,


RETIALES Sah & Dutta (non Staplin 1960) = ASSAMIALES Singh, SUBPILONAPITI.

Retialetes emendatus Sah & Dutta. Ramanujam et al. 1998c: 55, fig 1, MIocene, Borewell NSP-1 and NSP-2 near Narsapur, West Godavari District, Andhra Pradesh.

RETIBACULIPOLYCOLPITES Kar & Sharma, POLYPTYCHES.

Retibaculipolycolpites baculatus Kar & Sharma 2001: 130, 135, pl 5, figs 6, 12, pl 6, fig 5, pl 7, figs 7, 9, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

RETIBREVITRICOLPITES van Hoeken-Klinkenberg, TRIPTYCHES.

Retibrevitricolpites macroreticulatus Kumar & Takahashi 1991: 563, pl 14, fig 8, text-fig 10, EARLY LATE MIocene (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 70, pl 38, fig 13, EARLY-MIDDLE MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam.


Retibrevitricolpites triangulatus van Hoeken-Klinkenberg. Kumar 1994: 33, pl 7, fig 6, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

RETIWALPORITES Krutzsch, MONOLETES.

Reticulosporis spp. Kumar 1994: 40, 48, pl 12, figs 2, 5, pl 22, figs 1, 13, MIDDLE-LATE OLIGOCENE (Jenam and Renji formations), Silchar-Haflong Road Section, Assam.
?Reticulosporis sp. Kumar 1994: 64, pl 30, fig 15, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

RETIDIPOROCOLPITES Kar, DIPORINES.

Reticulopodites excellens Kar 1995b: 384, pl 1, figs 11-12, EARLY EOCENE (Palana Formation), Borehole core no. K 12 (Depth 134 m), around Kuchaur-Benia area, Bikaner District, Rajasthan; Sharma 2000: 52, pl 1, figs 2-3, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan; Kar & Sharma 2001: 129, pl 3, figs 1, 3, 12, pl 5, fig 2, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagar area, Bikaner District, Rajasthan.

Reticulopodites sp. Kar 1995b: 384, pl 1, figs 13-15, EARLY EOCENE (Palana Formation), Borehole core no. K 12 (Depth 134 m), around Kuchaur-Benia area, Bikaner District, Rajasthan.

RETIHEXACOLPITES Mathur, POLYPTYCHES.

Retihexacolpites medicolpatus Mathur, Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

RETIINAPERTURITES Mathur, SUBPILONAPITI.

Reticulopodites sp. Kumar et al. 2004: 158, pl 1, fig 2, NEOGENE and PLEISTOCENE, Site 218, Deep Sea Drilling Project Leg 22, Bengal Fan, Indian Ocean.

RETIMONOCOLPITES Pierce, MONOPTYCHES.

Retinocolpites thanikaimonii Samant & Phadtare 1997: 52, pl 11, figs 3-6, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, EARLY EOCENE (Kharasia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 129, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.
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**RETIOVOIPOLLIS** Krutzsch, MONOPORINES.

*Retiovoipollis* sp. Kumar & Takahashi 1991: 563-564, pl 18, fig 16, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

*Retiovoipollis* sp. Kumar 1994: 83, pl 44, fig 20, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

**RETIPILONAPITES** Ramanujam ex Potonié, SUBPIلونAPI.ت


*Retipilonapites barakensis* Kumar & Takahashi 1991: 564, pl 6, figs 6, 10, text-fig 11, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 46, pl 23, figs 14, 15, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

*Retipilonapites cenozoicus* Sah. Saxena & Rao 1996: 48, pl 2, fig 21, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramnikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.


**RETIPOLENITES** González Guzmán, RETICULONAPITI.


*Retipollenites confusus* González Guzmán, Kumar 1996: 112, pl 2, fig 9, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Samant & Phadtare 1997: 53, pl 11, figs 7-8, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 6, fig 2, EARLY EOCENE (Kharasalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Saxena 2000c: 163, pl
2, fig 7, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram.

**Retipollenites echinulatus** Samant & Phadtare 1997: 54, pl 11, figs 12-13, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

**Retipollenites laevigatus** Saxena & Khare 2004: 75, 77, pl 1, fig 8, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


**Retipollenites ramanujamii** Saxena & Khare 2004: 75, 82, pl 1, fig 12, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


**RETISTEPHANOCOLPITES** Leidelmeyer, POLYPTYCHES.

**Retistephanocolpites arcotense** (Ramanujam) Saxena 1982: 301

**Retistephanocolpites assamicus** Kumar 1994: 33, 99, pl 16, fig 5, pl 17, fig 11, pl 18, fig 4, pl 50, fig 7, MIDDLE OLIGOCENE and LATE MIOCENE-PLIOCENE (Jenam and Dupitila formations), Silchar-Haflong Road Section, Assam.

**Retistephanocolpites brevicolpus** Samant & Phadtare 1997: 56, pl 12, figs 6-10, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Tapawsi 2001: 129, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.


**Retistephanocolpites granulatus** (Sah & Kar) Kar, Mandal 1997: 100, pl 1, figs 14, 23, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Kar & Sharma 2001: 130, pl 5, fig 1, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Chakraborty 2004: 116, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam (wrongly spelt as Retistephanocolporites granulatus)

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Retistephanocolpites neogenicus Kumar & Takahashi 1991: 566-567, pl 6, fig 12, Early-Middle Miocene (Bhuban Formation), Silchar-Haflong Road Section, Assam.


Retistephanocolpites williamsii Germeraad et al. 1994: 49, Early Eocene (Bhavnagar lignite, Kharaslia Clay Formation), South Cambay Basin, Gujarat; Tripathi 1995: 47, pl 1, fig 14, PALAEocene-Eocene, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Phadtare & Samant 1996: 673, pl 1, figs 1-2, Early Eocene (Rajpardi lignite), Rajpardi, Bharuch District, Gujarat; Samant & Phadtare 1997: 55, pl 12, figs 1-3, Early Eocene (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, Early Eocene (Kharaslia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 129, pl 2, fig 7, Early Eocene (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Retistephanocolpites sp. Kar 1990b: 236, Middle Oligocene (Jenam Formation), Silchar-Haflong Road Section, Assam.


Retistephanocolpites sp. A. Kumar & Takahashi 1991: 565, pl 12, fig 15, Middle Miocene (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam.

Retistephanocolpites sp. B. Kumar & Takahashi 1991: 565, pl 5, fig 8, Middle Oligocene (Jenam Formation), Silchar-Haflong Road Section, Assam.

Retistephanocolpites sp. C. Kumar & Takahashi 1991: 565-566, pl 6, fig 11, Late Oligocene (Renji Formation), Silchar-Haflong Road Section, Assam.

Retistephanocolpites sp. Singh et al. 1992: 57, pl 2, fig 13, Miocene (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

Retistephanocolpites sp. A. Kumar 1994: 60, pl 33, fig 7, Early-Middle Miocene (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Retistephanocolpites sp. B. Kumar 1994: 60, pl 33, fig 6, Early-Middle Miocene (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Retistephanocolpites spp. Kumar 1994: 47, 71, pl 23, fig 7, Late Oligocene-Middle Miocene (Renji and Bhuban formations), Silchar-Haflong Road Section, Assam.

Retistephanocolpites sp. Misra et al. 1996: 95, 96, OLIGOCENE (Simsang Formation), Tura-Dalu Road near Kherapara, Garo Hills, Meghalaya.

Retistephanocolpites sp. Chandra & Kumar 1998: 67, pl 2, fig 5, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

Retistephanocolpites sp. Tripathi et al. 2000: 246, pl 1, fig 13, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

Retistephanocolporites van der Hammen & Wijmstra, PYCHOPOLYPORINES.

Retistephanocolporites sp. Kumar 1996: 112, pl 1, fig 3, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.


Retitetrabrevicolporites globatus (Venkatachala & Kar) Kar, Kar & Bhattacharya 1992: 252, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Mandal 1997: 99, pl 1, fig 16, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Kar & Sharma 2001: 130, pl 5, fig 8, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.


RETITETRABREVICOLPORITES Kar, PYCHOPOLYPORINES.

Retitetracolpites crassimurus Sah. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kumar et al. 2001: 245, fig 6.9, PLEISTOCENE (Dhekiajuli Formation), Tinali Well-7, Upper Assam.

Retitetracolpites bellus Sah. Kar et al. 1994: 186, pl 2, fig 9, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1996b: 42, LATE OLIGOCENE (Tikak Parbat Formation), Dillijepore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 181, pl 2, fig 26, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.

Retitrescolpites crassimurus Sah. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Hait & Banerjee 1994: 116, pl 2, fig 30, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram; Saxena 1995: 98, figs 12, 23, 40, 49, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quillon District, Kerala; Mandaokar 2000b: 181, pl 2, figs 2, 8, 25, OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Tripathi et al. 2000: 245, pl 1, fig 9, EARLY EOCENE (Tura Forma-
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Retitrescolpites horridus (Saluja et al.) Mandal & Rao 2001: 357.


Retitrescolpites megareticulatus (Mathur) Mandal & Rao 2001: 357.

Retitrescolpites megareticulatus Mathur 1966: 41, pl 1, fig 19, PALAEOCENE (Supratrappeans), Kutch District, Gujarat.


Retitrescolpites oblongus Sah. Kar et al. 1994: 186, pl 2, fig 32, TERTIARY, subsurface sediments in Upper Assam; Saxena 2000c: 163, pl 1, figs 12, 17, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimituipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Retitrescolpites ornatus Sah. Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh.


Retitrescolpites typicus Sah. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Mandaokar 1993: 139, pl 2, fig 17, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 183, pl 2, fig 41, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimituipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper...
Bhurban Formation), Champhai area, Eastern Mizo Hills, Mizoram.

Retitrescolpites sp. Kar 1990a: 190, 192, pl 5, figs 74-75, pl 6, fig 98, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

Retitrescolpites spp. A-B. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

Retitrescolpites spp. Kar 1990b: 236, 237, MIDDLE-LATE OLIGOCENE (Jenam and Renji formations), Silchar-Haflong Road Section, Assam.

Retitrescolpites sp. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya.

Retitrescolpites sp. Singh et al. 1992: 56, pl 1, fig 14, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

Retitrescolpites sp. Rao et al. 1993: 82, pl 1, fig 17, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala.


Retitrescolpites sp. Rao & Nair 1998: 53, pl 1, fig 10, MIOCENE, Kundra Clay Mine Section, Quilon District, Kerala.

Retitrescolpites sp. Mandaokar 2000b: 183, pl 2, fig 24, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

Retitrescolpites sp. Rao & Patnaik 2001: 277, pl 2, fig 9, LATE PlioCENE (Pinjor Formation), Nadah, Panchkula, Haryana.

Retitrescolpites sp. Kar = TRICOLPOROPOLLIS Dutta & Sah, Pycnotriporines.

Retitbrevicolporites decorus (Dutta & Sah) Kar & Kumar = Tricolporopollis decorus Dutta & Sah.


Retitbrevicolporites matanomadhensis (Venkatachala & Kar) Kar = Tricolporopollis matanomadhensis (Venkatachala & Kar) Tripathi & Singh.

Retitbrevicolporites ruber (Dutta & Sah) Kar & Kumar = Tricolporopollis ruber Dutta & Sah.

RETITRICOLPITES (van der Hammen) Pierce, Tripyches.

Retitricolpites crassireticulatus (Dutta & Sah) Samant & Phadtare 1997: 57, pl 12, figs 16-18, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 114, pl 5, fig 8, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 129, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Retitricolpites delicatus Kar = Tricolpites delicatus (Kar) Mandal & Rao.

Retitricolpites dipterocarpoides Rao & Ramanujam = Dipterocarpuspollenites retipilatus Kar.

Retitricolpites medireticulatus Mathur = Albertipollenites medireticulatus (Mathur) Mandal & Rao.

Retitricolpites megareticulatus Mathur = Retitrescolpites megareticulatus (Mathur) Mandal & Rao.
Retitricolporites ramanujamii Saxena & Khare 2004: 75, 82, pl 1, fig 12, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Retitricolporites robustus Sah & Kar = Alberipollenites robustus (Sah & Kar) Mandal & Rao.

Retitricolporites singhii Tripathi et al. 2000: 245, pl 1, figs 6-7, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

Retitricolporites singhii Saxena & Khare 2004: 75, 82, pl 1, fig 5, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu. (Junior homonym of Retitricolporites singhii Tripathi et al. 2000)

Retitricolporites sitholeyi Ramanujam = Rousea sitholeyi (Ramanujam) Mandal & Rao.


REITRICALPORITES (van der Hammen) van der Hammen & Wijmstra, PROLATIC.


Retitricolporites ghoshii Ramanujam = Margocolporites ghoshii (Ramanujam) Saxena & Khare.

Retitricolporites guianensis van der Hammen & Wijmstra. Hait & Banerjee 1994: 116, pl 2, fig 23, EARLY MIOCENE, near Suangpulawn village about 20 km northeast of Aizawl, Mizoram; Mitra et al. 2000: 126, pl 1, fig 25, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhurban Formation), Champhai area, Eastern Miz Hills, Mizoram.

Retitricolporites cf. guianensis van der Hammen & Wijmstra. Mandal & Kumar 2000: 204, pl 2, fig 3, MIO-PLIOCENE (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam.

Retitricolporites minor Saxena & Khare 2004: 75, pl 1, fig 18, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Retitricolporites sitholeyi (Ramanujam) Varma et al. Ramanujam et al. 1991: 54, pl 1, fig 13, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1992: 22, fig 2T, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 82, pl 1, fig 19, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Rao et al. 1995: 374, fig 23, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala.

Retitricolporites subcircularis Saxena & Misra 1990: 266, pl 1, fig 11, NEOGENE (Ratnagiri Beds), Amberiwi Section, Sindhudurg District, Maharashtra.


Retitricolporites sp. Kumar 1994: 93, LATE MIOCENE-PLIOCENE (Tipam Formation), Silchar-Haflong Road Section, Assam.

cf. Retitricolporites spp. Kumar 1994: 19, 60, pl 4, fig 2, pl 33, fig 8, EARLY OLIGOCENE and EARLY-MIDDLE MIOCENE (Laisong and Bhurban formations), Silchar-Haflong Road Section, Assam.


Retitricolporites sp. Rao 1996: 157, pl 1, fig 5, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala.

Retitricolporites sp. Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram.

Retitricolporites sp. 1. Trivedi & Saxena 2000: 275, pl 1, fig 6, pl 2, fig 10, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.

Retitricolporites sp. 2. Trivedi & Saxena 2000: 275, pl 1, fig 10, pl 2, fig 11, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.

Retitricolporites sp. Saxena & Khare 2004: 75, 83, pl 1, fig 15, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Retitricolporoidites Mathur, PYCHO-TRIPORINES.


Retitrilatiporites Misra et al., TRIPORINES.

Retitrilatiporites kutchensis (Venkatachala & Kar) Misra et al. 1996: 343, 345, pl 4, figs 3-4, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

Retitrilatiporites matanomadhensis Misra et al. 1996: 347, pl 4, figs 5-11, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

Retitrilatiporites minutus (Sah & Kar) Misra et al. 1996: 345, 347, pl 3, figs 11-14, pl 4, figs 1-2, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu.

Trilatiporites kutchensis Venkatachala & Kar, Kar & Bhattacharya 1992: 252, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.

Trilatiporites minutus Sah & Kar 1970: 138, pl 2, fig 40, EARLY EOCENE (Laki Series), Kutch District, Gujarat.

RETRITRILETES Pierce, MURORNATI.

Retitriletes sp. Kumar & Takahashi 1991: 600, pl 17, fig 8, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Retitriletes spp. Kumar 1994: 86, 101, pl 40, fig 10, pl 50, fig 9, LATE MIOCENE-PLEISTOCENE (Bokabil and Dupitila formations), Silchar-Haflong Road Section, Assam.

RETRITRIPORITES (van der Hammen) Pierce, TRIPORINES.


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**RETTIRISYNCOLPITITES** Mandal et al., TRIPTYCHES.

*Retitrisyncolpites reimannii* Mandal et al. 1994: 211, pl 1, figs 1-2, 15, EARLY EOCENE, Kadamtna, Andaman and Nicobar Islands; Mandal et al. 1996: 80, pl 1, fig 4, MIDDLE-LATE EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal et al. 2003: 102, 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

*Retitrisyncolpites thaungii* Mandal et al. 1994: 211, pl 1, figs 3, 9, 13, EARLY EOCENE, Kadamtna, Andaman and Nicobar Islands; Mandal et al. 1996: 80, pl 1, fig 11, MIDDLE-LATE EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal et al. 2003: 102, 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

*Retitrisyncolpites sp.* Mandal et al. 1994: 211, pl 1, fig 10, EARLY EOCENE Kadamtna, Andaman and Nicobar Islands.


**RETIVERRUMONOSULCITES** Tripathi, MONOPTYCHES.


**RHIZOMASPORA** Wilson, STRIARETI-CULOIDITI.

*Rhizomaspora costa* Venkatachala & Kar. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 240, EARLY MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked); Trivedi 1991: 67, LATE EOCENE (Kopil Formation), 136 km post from Shillong, Jowai-Badarpur Road, Jaintia Hills District, Meghalaya (Reworked).

*Rhizomaspora radiata* Wilson. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam (Reworked).

*Rhizomaspora sp.* Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked).

*Rhizomaspora sp.* Singh et al. 1991: 42, pl 1, figs 4-5, OLIGOCENE-EARLY MIOCENE (Barail and Surma Groups), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).


**RHOIPITES** Wodehouse, PROLA.TI.

Rhoipites bradleyi Wodehouse. Hait & Banerjee 1994: 116, pl 2, fig 18, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram; Mandaokar 2004: 146, LATE MIOCENE (Upper Bhuban Formation), Champhai area, Eastern Mizoram.


Rhoipites dubius Sah. Kumar & Takahashi 1991: 566, pl 6, fig 15, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 47, pl 23, fig 20, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Rhoipites kutchensis Venkatachala & Kar. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Bor, No. 1, Gojalia Bor, No. 1 and Baramura Bor, No. 2, Tripura; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Mandaokar 1993: 139, pl 1, fig 2, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Hait & Banerjee 1994: 116, pl 2, fig 20, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram; Kar et al. 1994: 187, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1996b: 42, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandal 1997: 99, pl 1, fig 12, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Mandaokar 2000b: 181, pl 1, fig 36, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.

Rhoipites nitidus Sah & Dutta. Mitra et al. 2000: 126, pl 1, fig 33, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

Rhoipites psilatus Sah. Mandaokar 1993: 139, pl 1, fig 5, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Hait & Banerjee 1994: 116, pl 2, fig 19, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

Rhoipites sp. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Bor, No. 1, Gojalia Bor, No. 1 and Baramura Bor, No. 2, Tripura.

Rhoipites sp. A. Kumar & Takahashi 1991: 566, pl 5, fig 13, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

Rhoipites sp. B. Kumar & Takahashi 1991: 566-567, pl 5, fig 15, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.
?Rhoipites sp. Kumar & Takahashi 1991: 567, pl 6, fig 16, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Rhoipites sp. Kar & Bhattacharya 1992: 252, pl 2, figs 23, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.

Rhoipites sp. Kumar 1994: 13, pl 1, fig 13, LATE CRETACEOUS-EOCENE (Disang Formation), Silchar-Haflong Road Section, Assam.

Rhoipites sp. A. Kumar 1994: 34, pl 18, fig 3, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.

cf. Rhoipites sp. Kumar 1994: 61, pl 33, fig 20, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.


Rhoipites sp. Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.


ROUSEA Srivastava, TRIPTYCHES.


Tricolpites globus Dutta & Sah. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya.

Rousea matanomadhensis (Saxena) Mandal & Rao 2001: 360-361, pl 1, figs 10-11.


Rousea meghalayaensis Mandal & Rao 2001: 361, pl 5, fig 1, LATE PALAEOCENE (Lakadong Sandstone), Upper Cherrapunji, Meghalaya.

Rousea saxenae Mandal & Rao 2001: 361, pl 5, figs 12-14, LATE PALAEOCENE (Matanomadh Formation), Matanomadh, Kutch District, Gujarat.


Retitricolpites sitholeyi Ramanujam 1966: 163, pl 2, fig 30, MIOCENE (Neyveli Lignite), South Arcot District, Tamil Nadu.

ROUSEISPORITES Pocock, HILATES.

Rouseisporites reticulates Pocock. Kumar et al. 2004: 160, pl 1, fig 14, NEOGENE and PLEISTOCENE, Site 218, Deep Sea Drilling Project Leg 22, Bengal Fan, Indian Ocean (Reworked).

Rouseisporites sp. Saxena & Rao 1996: 48, pl 3, fig 9, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya (Reworked).
**Rouseisporites sp.** Chandra & Kumar 1998: 62, pl 1, fgs 3, 6, pl 2, fig 7, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean (Reworked).

**Rouseisporites sp.** Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya (Reworked).


**RUBIA**

**RUSIZIA** Sah, ALETES.

**Rusizia kivuensis** Sah. Salujha et al. 1991: 66, pl 1, fig 29, NEOGENE, Adamtila Well-A, Cachar District, Assam.

**SAHNITES** Pant, VESICULOMONORADITI.

**Sahnites sp.** Gupta et al. 2003: 212, PALAEOCENE-EOCENE, Ganga Basin (Reworked).

**SANTALACIDITES** Stelmak in Pokrovskaya & Stelmak, TRIPORINES.

**Santalacidites santaloides** Stelmak in Pokrovskaya & Stelmak. Kumar 1994: 93, LATE MIOCENE-PLIOCENE (Tipam Formation), Silchar-Haflong Road Section, Assam.

**SAPOTACEOIDAEPOLLINITES** Potonié et al. ex Potonié, PTYCHOPOLYPORINES.

**Sapotaceoidaepollenites africanus** Sah. Ramanujam et al. 1991: 54, pl 1, fig 18, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 2, fig 12, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 22, fig 3G, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 82, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

**Sapotaceoidaepollenites cauveriensis** Saxena 1993: 196.


**Sapotaceoidaepollenites communis** Sah. Mitra et al. 2000: 126, pl 1, fig 29, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya.

**Sapotaceoidaepollenites keralaeensis** Rao & Ramanujam. Ramanujam et al. 1991: 54, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 2, fig 11, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 22, fig 3F, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 82, pl 1, fig 23, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Rao et al. 1995: 374, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala.

**Sapotaceoidaepollenites neyvelii** Ramanujam. Ramanujam et al. 1991: 54, pl 1, fig 16, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala (wrongly spelt as *Sapotaceoidaepollenites neyveliensis*); Ramanujam et al. 1992: 22, figs 3D, E, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala (wrongly spelt as *Sapotaceoidaepollenites neyveliensis*); Rao et al. 1993: 82, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala (wrongly spelt as *Sapotaceoidaepollenites neyveliensis*); Rao et al. 1995: 374, EARLY MIOCENE, Borewell at Kulasekharamangalam,
Kottayam District, Kerala (wrongly spelt as *Sapotaceoidaepollenites neyveliensis*).

**Sapotaceoidaepollenites oblongatus** Venkatachala & Rawat. Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.


**Sapotaceoidaepollenites obscurus** Sah. Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.


**Sapotaceoidaepollenites sp.** Kumar 1994: 93, LATE MIOCENE-PLIOCENE (Tipam Formation), Silchar-Haflong Road Section, Assam.


**Sapotaceoidaepollenites sp.** Kumar et al. 2001: 250, fig 6.5, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.

**ASTRIIPOLLENITES** Venkatachala & Kar, PROLATI.


**SAXONIPOLLIS** Krutzsch, TETRADITES.


**SCABRASTEPHANOCOLPITES** van der Hammen & Garcia de Mutis, POLYPTYCHES.

**Scabrastephanocolpites ornatus** Kumar 1994: 71, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Scabrastephanocolpites ovatus** Kumar & Takahashi 1991: 567-568, pl 5, figs 2, 4, text-fig 12, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 34, 61, pl 17, figs 3, 13, pl 19, figs 10, 20, pl 33, fig 18, MIDDLE OLIGOCENE and EARLY-MIDDLE MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam.

**SCANTIGRANULITES** Kar, APICULATI.


**Scantigranulites sp.** Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibugarh District, Assam.
SCHEURINGIPOLLENITES Tiwari, DISACCITES.

Scheuringipollenites maximus (Hart) Tiwari. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Singh et al. 1991: 42, pl 2, figs 11-12, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked); Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya (Reworked); Mandal et al. 2003: 100, 102, pl 3, fig 10, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Scheuringipollenites tentulus Tiwari. Kar 1990a: 180, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

SCHIZAEACEAESPORITES Baksi, MURORNATI.

Schizaeaceaesporites knoxii Baksi. Misra et al. 1996: 95, OLIGOCENE (Simisang Formation), Tura-Dalu Road near Kherapara, Garo Hills, Meghalaya.


SCHIZAEISPORITES Potonié ex Delcourt & Sprumont, ORNATI.

Schizaeoisporites crassimurus Dutta & Sah. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 219, PALAEOCENE (Tura Formation), Langrini Coalfield, Khasi Hills, Meghalaya; Mandaokar 1993: 139, pl 2, fig 8, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugah District, Assam; Mandaokar 2000b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.


Schizaeoisporites grandiformis Ramanujam. Singh et al. 1992: 56, pl 1, fig 5, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala.


Schizaeoisporites multistriatus Rao & Ramanujam. Ramanujam et al. 1991: 53, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1992: 21, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala;
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Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Rao et al. 1995: 372, EARLY MIOCENE, Borwell at Kulasekharamangalam, Kottayam District, Kerala; Samant & Phadtare 1997: 12, pl 2, fig 4, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 104, pl 1, fig 14, EARLY EOCENE (Kharadalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Schizaeoisporites palanaensis Sah & Kar 1997: pl 2, fig 5, EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

Schizaeoisporites perforatus Naskar & Baksi. Ramanujam et al. 1991: 3, pl 1, fig 17, NEogene, Myngapalli Borwell, Quilon District, Kerala.


Schizaeoisporites sahii Samant & Phadtare 1997: 12-13, pl 2, fig 5, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

Schizaeoisporites sinuata Ramanujam. Saxena & Khare 2004: 73, LATE PALAEOCENE-MID-
area, Thanjavur District, Cauvery Basin, Tamil Nadu.

**Schizaecoisporites.** Sharma 2000: 54, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan.

**SCHIZOSPORIS** Cookson & Dettmann, INCERTAE SEDIS.

Schizosporis crassimurus Sah & Dutta = Assamialetes crassimurus (Sah & Dutta) Singh & Tripathi.

**SCROBICULATRICOLPORITES** Singh & Misra, Ptychotriporines.

Scrobiculatricolporites undulatus Singh & Misra 1991a: 63, pl 1, figs 14-20, text-fig 1, MIOCENE (Cuddalore Formation), Borahole No. 35, Mine III area, Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 56, pl 1, fig 16, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Kumar 1996: 112, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**SEMIOCULOPOLLIS** Góczán et al., Triporines.

Semioculopollis verrucosa Christopher. Gupta et al. 2003: 591, fig 3d, PALAEOGENE, Ganga Basin.

**SENIASPORITES** Sah & Kar, Sculptato-Monoleti.


Seniasporites minutus Sah & Kar. Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Mandaokar 1995: 26, pl 1, figs 9, OLGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Mandal 1997: 99, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

Seniasporites verrucosus Sah & Kar. Kar 1990a: 182, 184, pl 1, fig 15, pl 2, fig 41, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Mandaokar 1995: 25-26, pl 1, figs 30, 46, OLGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam; Chakraborty 2004: 115, pl 1, fig 18, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam; Saxena & Khare 2004: 73, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondachalapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Seniasporites sp. Kar 1990a: 176, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

Seniasporites sp. Kar 1990b: 237, LATE OLGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Seniasporites sp. Mandaokar 1995: 26, pl 1, fig 13, OLGOCENE, Ledo Colliery, Makum Coalfield, Tinsukia District, Assam.

**SESTROSPORITES** Dettmann, Tricrassati.


**SIMPLIBACULATEPOLLIS** Kar & Sharma, Polyptyches.

Simplibaculatepollis aerolatus Kar & Sharma 2001: 130, 136, pl 7, figs 2, 13, 14, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

Simplibaculatepollis bithnokensis Kar & Sharma 2001: 130, 136, pl 7, figs 4, 11, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.
SONNERATIOPOLLIS Venkatachala & Kar, TRIPORINES.

Sonneratioipollis bellus Venkatachala & Kar. Kumar et al. 2001: 244, fig 6,6, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.

SPARGANIACEAEOPollenites Thiergart, MONOPORINES.

Sparganiaceaepollenites polygonalis Thiergart. Hait & Banerjee 1994: 117, pl 3, fig 42, EARLY MIocene, near Suangpuilawn village about 20 km northeast of Aizawl and around Champhai, Mizoram; Kumar 1994: 34, pl 20, fig 15, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Mandaokar 2002a: 116, EARLY MIocene (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2004: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2004: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram.


Sphagnumsporites sp.

SPHEROCOLPITES in Misra & Kapoor. Nomen nudum.


Spinainaperturites conatus Venkatachala & Rawat. Tripathi et al. 2000: 245, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Saxena & Khare 2004: 75, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


Spinainaperturites horridus Venkatachala & Rawat. Saxena & Khare 2004: 75, pl 1, fig 18, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.


Spinainaperturites spp. Kumar 1994: 52, 61, 71, pl 24, figs 13, 18, pl 26, fig 6, pl 27, fig 10, pl 31, fig 5, EARLY-MIDDLE MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Spinainaperturites sp. Kumar 1994: 83, pl 43, fig 15, LATE MIocene (Bokabil Formation), Silchar-Haflong Road Section, Assam.

SPINITETRADOCOLPORITES Kar & Sharma, PTYCHOPOLYPORINES.

Spinitetradocolporites spinosus Kar & Sharma 2001: 130, 140, pl 5, figs 5, 10, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

SPINIZONOCOLPITES Muller, MONOPTYCHES.
Spinizonocolpites adamanteus Muller. Sing. 1990: 219, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Banerjee & Nandi 1994: 219, pl 1, fig 22, EARLY-MIDDLE MIocene (Middle Bhutan Formation), near Kolasib, Aizawl District, Mizoram; Mandal et al. 1996: 80, pl 1, fig 14, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal 1997: 100, pl 1, fig 21, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Punedeer & Mehrotra 2000: 141, THANETIAN-Ypresian (Basal Sandstone), Upper Assam Shelf; Kar & Sharma 2001: 129, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Mandal et al. 2003: 104, pl 1, fig 9, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aldi Formation), Barmer Basin, Rajasthan.

Spinizonocolpites brevispinosus in Mitra et al. 2000: 126, pl 1, fig 20, NEOGENE (Siwalik Group), Darjeeling Foothills, Eastern Himalaya. Nomen nudum.

Spinizonocolpites bulbospinosus Singh 1990: 226, pl 1, figs 3, 6, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Saxena & Rao 1996: 48, pl 2, fig 6, EARLY MIocene (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldmagiri, West Garo Hills District, Meghalaya.

Spinizonocolpites duplispinosus Ambwani 1993: 158, fig 5D, PALAEOCENE-EARLY EOCENE, Rekmangiri Coalfield, Garo Hills, Meghalaya.

Spinizonocolpites echinatus Muller. Kar 1990b: 236, MIDDLE OLIGOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 219, pl 2, fig 16, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Mandaokar 1991: 27, EARLY MIocene, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked); Kar & Bhowmick 1992: 251, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Ambwani 1993: 160, PALAEOCENE-EARLY EOCENE, Seam Nos. 1, 2 and 3, Rekmangiri Coalfield, Garo Hills, Meghalaya; Mandaokar 1993: 139, pl 1, fig 36, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 186, pl 2, fig 10, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Latitymbrai, Jaintia Hills District, Meghalaya; Tripathi 1995: 47, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Mandal et al. 1996: 80, pl 1, fig 17, LATE PALAEOCENE-EARLY EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 42, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Samant & Phadtare 1997: 58, pl 13, figs 3-4, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Tripathi 1997: 170, LATE PALAEOCENE-EARLY EOCENE, MK 327 and MK 332 boreholes, near Kapurdi, Barmer District, Rajasthan; Ramanujam et al. 1998c: 55, fig 4, MIocene, Borewell NSP-1 and NSP-2 near Narasapur, West Godavari District, Andhra Pradesh; Ramanujam et al. 1999: 35, pl 2, fig 36, MIocene, South Arcot and Thanjavur districts, Tamil Nadu; Acharya 2000: 22, EARLY EOCENE, Borehole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Mandaokar 2000a: 320, EARLY MIocene (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 181, pl 2, fig 13, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 15, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunchal Pradesh; Punedeer & Mehrotra 2000: 141.
THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf; Rao 2000: 295, pl 1, fig 10, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Sharma 2000: 52, pl 1, fig 5, LATE PALAEOCENE, Borehole No. 125, Bithnik area, Bikaner District, Rajasthan; Trivedi & Saxena 2000: 275, pl 1, fig 1, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Kar & Sharma 2001: 129, LATE PALAEOCENE-EARLY EOCENE (Palina Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Samant & Tapaswi 2001: 129, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, pl 1, fig 15, pl 2, fig 2, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Singh & Kar 2002: 214, pl 1, fig 2, PALAEOCENE (Deccan Intertrappean Beds), 3 km northeast of Papro village, Lalitpur District, Uttar Pradesh; Kapoor et al. 2003: 182, OLIGOCENE-NEOCENE (Dharmasala and Siwalik), Dharmasala and Nурpur areas, Kangra District, Himachal Pradesh; Singh & Kar 2003: 219, pl 2, fig 1, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aki Formation), Barmer Basin, Rajasthan; Chakrabarty 2004: 116, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam; Saxena & Khare 2004: 75, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Spinizonocolpites indicus** Singh 1990: 226, pl 2, figs 1-2, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

**Spinizonocolpites intrarugulatus** Muller et al. Singh 1990: 219, pl 2, fig 4, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

**Spinizonocolpites prominatus** (McIntyre) Stover & Evans. Samant 2000: 114, pl 6, fig 5, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Tripathi et al. 2003: 91, LATE PALAEOCENE (Aki Formation), Barmer Basin, Rajasthan.


**Spinizonocolpites thanikaimonii** Samant & Phadtare 1997: 58-59, pl 13, fig 5, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

**Spinizonocolpites venkatachalae** Saxena & Khare 2004: 75, 78, pl 1, figs 4, 23, pl 2, fig 9, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

**Spinizonocolpites wodehousei** Singh 1990: 225, pl 1, figs 14-15, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

**Spinizonocolpites sp. A.** Singh 1990: 226, pl 2, fig 5, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya.

**Spinizonocolpites sp.** Rao et al. 1993: 82, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala.


**Spinizonocolpites sp.** Rao et al. 1995: 374, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala.

**Spinizonocolpites sp.** Ramanujam et al. 1999: 39, pl 2, fig 35, MIOCENE, South Arcot and Thanjavur districts, Tamil Nadu.


Spinizonocolpites sp. Singh & Kar 2003: 219, pl 2, fig 3, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

SPINOMONOSULCITES Singh & Misra, MONOPTYCHES.


Neocouperipollis achinatus (Sah & Kar) Kar & Kumar. Kar 1990b: 232, 233, 236, EOCENE-MIDDLE OLIGOCENE (Disang, Laisong and Jenam formations), Silchar-Haflong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya (wrongly spelt as Neocouperipollis echinatus); Singh 1990: 219, pl 2, fig 7, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya (wrongly spelt as Neocouperipollis echinatus); Mandaokar 1991: 27, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam, Meghalaya (wrongly spelt as Neocouperipollis echinatus; Reworked); Kar & Bhattacharya 1992: 251, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Kumar 1996: 112, pl 2, fig 17, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Spinomonosulcites ankleshwarensis (Kar & Bhattacharya) Samani & Phadtare 1997: 59-60, pl 13, fig 6, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

Neocouperipollis ankleshwarensis Kar & Bhattacharya 1992: 252, pl 1, fig 34, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Kumar 1996: 112, pl 2, fig 17, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Samant & Tapaswi 2001: 128, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat.

Spinomonosulcites brevispinosus (Biswas) Kumar 1994: 61, 71, pl 32, figs 12, 33, fig 4, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Couperipollis brevispinosus (Biswas) Venkatachala & Kar. Kumar & Takahashi 1991: 541, pl 12, fig 13, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong
Neocouperipollis brevispinosus (Biswas) Sarkar & Singh. Sarkar 1991: 3, pl 3, fig 13, EARLY EOCENE (Kakara Series), near Kakara-Chapla group of villages, north of Gambhar River, Shimla District, Himachal Pradesh; Mandal et al. 1996: 80, pl 1, fig 7, LATE PALAEOCENE-EARLY EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Sarkar 1997: 109, pl 2, fig 3, EOCENE (Subathu Formation), 20 km southeast of Bilaspur on Shimla-Bilaspur Highway, Bilaspur District, Himachal Pradesh; Sarkar & Prasad 2000a: 171, pl 1, fig 12, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), Koshalia Nala Section near Koti, Shimla Hills, Solan District, Himachal Pradesh; Sarkar & Prasad 2000b: 147, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Ghaggar river near Kharak village, Morni Hills, Haryana; Saxena & Sarkar 2000: 257, MIDDLE EOCENE (Siju Formation), Simsang River Section near Siju, South Garo Hills District, Meghalaya; Kar & Sharma 2001: 129, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Mandal et al. 2003: 102, 104, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands; Singh et al. 2003: 204, pl 2, figs 15-16, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Koti areas, Solan District, Himachal Pradesh; Saxena & Khare 2004: 74, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Spinomonosulcites echinatus Kumar 1994: 71, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.


Monosulcites magnus Dutta & Sah 1970: 28, pl 5, figs 1-2, PALAEOCENE (Cherra Formation), Umstew, Shillong Plateau, Meghalaya; Dutta (Dutta & Sah) Kar & Kumar. Singh & Tripathi 1990: 329, pl 1, fig 21, MIocene (Siwalik sediments), Arunachal Pradesh.

Neocouperipollis magnus (Dutta & Sah) Kar & Kumar. Singh & Tripathi 2000: 257, MIDDLE EOCENE (Siju Formation), Upper Cherapunji, Khasi Hills, Meghalaya.


Couperipollis spinorobustus Kar & Kumar: 1986: 195, pl 5, fig 6, PALAEOCENE (Lakadong Sandstone), Upper Cherrapunji, Khasi Hills, Meghalaya.


Spinomonosulcites varispinosus Singh & Misra 1991c: 223, pl 1, fig 12, MIocene (Cuddalore Road Section, Assam; Handique et al. 1992: 219, LATE EOCENE-OLIGOCENE (Barail Group), Moran Oilfield, Upper Assam; Mandaokar 2000c: 43, pl 1, fig 16, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.
Spinomonosulcites spp. Kumar 1994: 15-16, 34, 77, 83, pl 3, fig 7, pl 14, figs 6, 9, pl 15, figs 14, 15, pl 16, fig 1, pl 40, fig 14, pl 44, figs 8, 23, EARLY-MIDDLE Oligocene and MIOCENE (Laisong, Jenam, Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam.


Spinisopites acolporata Baksi. Misra et al. 1996: 95, 96, OLIGOCENE (Simsang Formation), Tura-Dalu Road near Kherapara, Garo Hills, Meghalaya.


Spore type 1. Sarkar et al. 1994: 202, pl 2, fig 14, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand.

Spore type 2. Sarkar et al. 1994: 202, pl 2, fig 5, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand.

Spore type 1. Saxena et al. 1996: 22, pl 1, fig 7, pl 2, fig 1, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.

Spore type 2. Saxena et al. 1996: 22, pl 2, fig 5, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.

Spore type. Rao & Patmaik 2001: 276, pl 1, figs 5-6, LATE PlioCENE (Pinjor Formation), Nadah, Panchikula, Haryana.

Spore type 1. Singh & Kar 2003: 220, pl 1, fig 9, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papro, Lalitpur District, Uttar Pradesh.

Staurosaccites Dolby, DISACCIATRILETI.

Staurosaccites quadrifidus Dolby. Mandal et al. 2003: 102, pl 2, fig 11, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Stephanocolpites van der Hammen, POLYTYCHES.

Stephanocolpites arcotense Ramanujam = Retistephanocolpites arcotense (Ramanujam) Saxena.


Stephanoporopollenites Pflug & Thomson in Thomson & Pflug, POLYPORINES.


Stephanoporopollenites sp. Kumar & Takahashi 1991: 568, pl 12, figs 4, 7, Silchar-Haflong Road Section, Assam.
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**Stephanoporopollenites sp. A.** Kumar 1994: 61, pl 32, fig 12, pl 33, fig 4, EARLY-MIDDLE MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Stephanoporopollenites spp.** Kumar 1994: 71, 77, 83, 94, MIOCENE-PLIOCENE (Bhuban, Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam.

**STEREISPORITES** Pflug in Thomson & Pflug, LAEVIGATI.


**Stereisporites formosus** Salujha et al. Salujha et al. 1991: 65, pl 1, fig 5, NEOGENE, Adamiya Well-A, Cachar District, Assam.

**Stereisporites sp.** Kumar & Takahashi 1991: 600, pl 2, fig 9, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

**Stereisporites spp.** Kumar 1994: 13, 87, pl 1, figs 1a, b, pl 39, fig 15, LATE CRETACEOUS-EOCENE and LATE MIOCENE (Disang and Bokabil formations), Silchar-Haflong Road Section, Assam.


**STRIABREVICOLPORITES** Samant & Phadtare, PTYCHOTRIPORINES.

**Striabrevicolporites reticulatus** Samant & Phadtare 1997: 60, pl 13, figs 7-9, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.

**STRIACOLPORITES** Sah & Kar, PROLATI.

**Striacoelporites cephalus** Sah & Kar. Kar 1990a: 177, pl 5, fig 85, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Rao 1990: 248, pl 3, fig 10, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Saxena 1991: 370, fig 11, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Kar et al. 1994: 187, pl 1, fig 20, TERTIARY, subsurface sediments in Upper Assam; Saxena 1995: 100, fig 31, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala; Rao & Rajendran 1996: 66, MIOCENE, Cannanore District, Kerala; Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

**Striacoelporites minor** Kumar 1994: 35, pl 17, fig 5, MIDDLE OLIGOCENE (Jenam Formations), Silchar-Haflong Road Section, Assam.

**Striacoelporites ovatus** Sah & Kar. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Rao 1990: 248, pl 3, fig 28, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin.

**Striacoelporites striatus** Sah & Kar. Rao 1995a: 328, pl 3, fig 6, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Rao & Rajendran 1996: 66, MIOCENE, Cannanore District, Kerala; Mandal 1997: 100, pl 1, fig 17, LATE EOCENE (Barail Group), Marrani-Mokokchung Road, Mokokchung District, Nagaland; Samant & Phadtare 1997: 61, pl 13, fig 10, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Mandaokar
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1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Samant 2000: 115, pl 6, fig 6, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Chakraborty 2004: 116, pl 1, fig 19, LATE PALAEOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.

Striocolporites sp. Mandal et al. 1996: 80, pl 1, fig 16, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands.

STRIASULCITES Venkatachala & Kar, MONOPTYCHES.


Striasulcites. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

STRIATITES Pant, STRIATITI.

Striatites sewardii (Virkki) Pant. Singh et al. 1991: 42, EARLY MIocene (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

Striatites tectus Venkathachala & Kar. Srivastava & Bhattacharyya 2000: 375, pl 3, fig 9, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

Striatites varius Kar. Srivastava & Bhattacharyya 2000: 375, pl 3, fig 3, EARLY TERTIARY, Arunachal Pradesh (Reworked); Mandal et al. 2003: 102, 104, pl 2, fig 9, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).


STRIATOCOLPORITES van der Hammen, PTYCHOTRIPORINES.

Striocolporites minor Kumar & Takahashi 1991: 568-569, pl 5, fig 11, text-fig 13, MIDDLE OOLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 35, pl 17, fig 5, MIDDLE OOLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam (wrongly spelt as Striacolporites minor). (Junior homonym of Striocolporites minor Mathur & Chopra 1987)

STRIATOPODOCARPITES Sedova, STRIATITI.

Striopodocarpites brevis Sinha. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked); Gupta et al. 2003: 212, PALAEOCENE-EOCENE, Ganga Basin.

Striopodocarpites diffusus Bharadwaj & Saluja. Kar 1990a: 181, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 237, 240, LATE OOLIGOCENE-EARLY MIocene (Renji and Bhuban formations), Silchar-Haflong Road Section, Assam (Reworked).

Striopodocarpites plicatus (Kar) Bharadwaj & Dwivedi. Kar 1990a: 181, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked).

Striopodocarpites venustus Bharadwaj & Saluja. Kar 1990a: 181, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 240, EARLY MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam (Reworked).

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Striatopodocarpites sp. Singh et al. 1991: 42, pl 1, figs 6, 12, OLIGOCENE-EARLY MIOCENE (Barail and Surma Groups), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

Striatopodocarpites sp. Singh et al. 1991: 42, pl 1, fig 6, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked).


Striatopodocarpites sp. Singh et al. 1991: 42, pl 1, fig 6, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam (Reworked).

Striatopodocarpites sp. Saxena & Rao 1996: 48, pl 3, figs 19-20, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya (Reworked).

Striatopodocarpites sp. Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram (Reworked).

Striatopodocarpites sp. Rao 2000: 297, pl 2, fig 15, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Striatopodocarpites sp. Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland (Reworked).


Striatopodocarpites sp. Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram (Reworked).

Striatopodocarpites sp. Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram (Reworked).

Striatopodocarpites sp. Rao 2000: 297, pl 2, fig 15, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Striatopodocarpites sp. Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland (Reworked).


Striatopodocarpites sp. Kumar et al. 2004: 160, pl 1, fig 8, NEogene and PLEISTOCENE, Site 218, Deep Sea Drilling Project Leg 22, Bengal Fan, Indian Ocean.

STRIATOPOLLIS Krutsch, TRIPTYCHES.

Striatopollis sp. Kumar & Takahashi 1991: 569, pl 6, fig 14, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Striatopollis sp. Kumar 1994: 47, pl 23, fig 6, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam.

Striatopollis sp. Mandal et al. 2003: 102, 106, pl 1, fig 8, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

STRIATRILETES van der Hammen, PTYCHOTripporines.

Striatriletes attenuatus Singh & Tripathi. Singh & Tripathi 1990: 329, pl 1, figs 16, 23, MIOCENE (Siwalik sediments), Arunachal Pradesh.


Striatriletes indicus Singh et al. Kapoor et al. 2003: 182, OLIGOCENE-NEogene (Dharmsala and
Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**Striatriletes jagdevii** Singh et al. Kapoor et al. 2003: 182, OLIGOCENE-NEogene (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**Striatriletes juxtacostatus** Singh et al. Kapoor et al. 2003: 182, OLIGOCENE-NEogene (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**Striatriletes macrocostatus** in Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin. Invalid combination.

**Striatriletes mediostriatus** (Bolkhovitina) Saxena & Bhattacharyya 1990: 110, pl 1, fig 4, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Churan Khad Section near Dharmsala, Kangra District, Himachal Pradesh.

**Striatriletes microverrucosus** Kar & Saxena. Kar 1990a: 175, pl 9, fig 132, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 237, 239, EOCENE-EARLY MIOCENE (Disang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Kumar et al. 2001: 244, fig 5.16, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam; Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin; Kapoor et al. 2003: 182, OLIGOCENE-NEogene (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**Striatriletes multicoostatus** Kar & Saxena. Kar 1990a: 175, pl 3, fig 60, pl 9, fig 136, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 237, 239, EOCENE-EARLY MIOCENE (Disang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 2, fig 31, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Sarkar et al. 1994: 201, pl 2, fig 17, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 2, fig 15, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Srivastava & Bhattacharyya 2000: 375, pl 1, fig 5, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh; Trivedi & Saxena 2000: 273, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Kumar et al. 2001: 244, 245, OLIGOCENE, EARLY-MIDDLE MIOCENE and MIO-PLIOCENE (Barail Group, Surma and Tipam groups excluding Girujan Clay Formation and Namsang Formation), Tinali Well-7, Upper Assam; Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin; Kapoor et al. 2003: 182, OLIGOCENE-NEogene (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**Striatriletes pachyexinus** Rao & Singh = Cicatricosisporites pachyexinus (Rao & Singh) Kumar & Takahashi.

**Striatriletes cf. pachyexinus** Rao & Singh. Kumar 1994: 21, pl 2, fig 2, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.
**Striatriletes paucicostatus** Kar. Kar 1990a: 198, pl 9, fig 139, MIOCENE (Surma and Tipam groups), Roikia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 236, 237, 239, EOCENE-EARLY MIOCENE (Disiang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Mandaokar 1993: 139, pl 1, fig 20, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; K Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Sarkar et al. 1994: 201, LATE EOCENE (Mid-Siwalik), Bagh Rao, Dehradun District, Uttaranchal; Mandal et al. 1996: 81, OLIGOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal 1997: 99, pl 1, fig 2, LATE EOCENE (Barail Group), Mandaokar 2000c: 38, pl 2, fig 14, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Kumar et al. 2001: 245, MIOCENE-PLIOCENE (Namsang Formation), Tinali Well-7, Upper Assam; Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**Striatriletes sahnii** Singh et al. Kapoor et al. 2003: 182, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh. Nomen nudum.


**Striatriletes susannae** van der Hammen = **Citricosisporites susannae** (van der Hammen) Kumar & Takahashi.

**Striatriletes tetradites** Rao 2000: 299, pl 2, fig 17, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

**Striatriletes sp.** Saxena & Bhattacharyya 1990: 110, pl 1, figs 3, 6, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Churum Khad Section near Dharmsala, Kangra District, Himachal Pradesh; Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands.

**Striatriletes pseudocostatus** Singh & Tripathi. Saxena & Bhattacharyya 1990: 110, pl 1, fig 2, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Churun Khad Section near Dharmsala, Kangra District, Himachal Pradesh; Singh & Tripathi 1990: 329, MIOCENE (Siwalik sediments), Arunachal Pradesh; Saxena & Rao 1996: 46, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purahkhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.

**Striatriletes punctatus** Saxena & Rao 1996: 50-52, pl 1, figs 16-17, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purahkhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya. Strobilanthidites Sah. TRIPORINES.

**Strobilanthidites cf. africanus** Sah. Mandal & Kumar 2000: 204-205, pl 2, fig 10, MIOCENE-PLIOCENE (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam; Kumar et al. 2001: 245, MIOCENE-PLIOCENE (Namsang Formation), Tinali Well-7, Upper Assam.
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STROTERSPORITES Wilson, STRIATITI.

Strotersporites decorus (Bharadwaj & Saluja)
Venkatachala & Kar. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

SUBTRIPOROPOLLIS Sah, PROLATI.


Subtriporopollis sp. A Rao 1996: 157, pl 1, fig 13, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala.

Subtriporopollis sp. B Rao 1996: 157, pl 1, fig 15, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala.

Subtriporopollis sp. Rao & Rajendran 1996: 74, pl 3, fig 5, MIOCENE (Quilon Formation), Meenkunu Phase III, Cannanore District, Kerala.

SURMASPORA Singh & Rao, APICULATI.

Surmaspora karii Rao & Rajendran 1996: 67, pl 1, figs 24-26, MIOCENE (Quilon Formation), Meenkunu Phase II, Cannanore District, Kerala; Ramanujam et al. 1998b: 48, pl 1, figs 1-5, MIOCENE (subsurface sediments), Godavari Basin (Andhra Pradesh) and Cauvery Basin (Tamil Nadu).

SYMPLOCOIPOLLENITES Potonié ex Potonié, PROLATI.


Symplocioipollenites verrucatus Samant & Phadtare 1997: 61, pl 13, figs 11-12, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.


Syncolpate pollen. Srivastava & Bhattacharyya 2000: 375, pl 2, figs 5-6, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh.

TAENIAESPORITES Leschik, STRIATITI.
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**Taeniaesporites sp.** Kar 1990b: 232, EOCENE (Disang Formation), Silchar-Haflong Road Section, Assam (Reworked).

**Tamilipollenites** Singh & Misra, **PTYCHOPOLYPORINES.**

Tamilipollenites grandis Singh & Misra 1991a: 73, pl 4, figs 8, 11-12, MIOCENE (Cuddalore Formation), Borahole No. NLE-36, Mine III area, Neyveli Lignitefield, South Arcot District, Tamil Nadu.

Tamilipollenites robustus Singh & Misra 1991a: 72-73, pl 4, figs 6-7, 9-10, MIOCENE (Cuddalore Formation), Borahole No. NLE-36, Mine III area, Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 56, pl 1, fig 18, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**Tamilnaduapollis** Achariya, **TRIPTYCHES.**

Tamilnaduapollis reticulatus Achariya 2000: 22, pl 1, figs 1, 4, 6, EARLY EOCENE, Borahole No. MII 128 (depth 141.2-141.25 m), Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu.

**TAXODIACEAEPOLLENITES** Kremp ex Potonié, **ALETES.**


**Tetracolporate pollen.** Kumar 1996: 114, pl 2, fig 2, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**TETRACOLPITES** Vimal ex Srivastava, **POLYPTYCHES.**


Tetracolporate pollen. Kar & Sharma 2001: 156, pl 6, fig 3, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.

**Tetracolporites** Couper, **PTYCHOPOLYPORINES.**

Tetracolporites brevicolpus Dutta & Sah. Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya.


**TETRACOLPOROPOLLENITES** Pflug & Thomson in Thomson & Pflug, **PTYCHOPOLYPORINES.**

Tetracolporopollenites brevis Samant & Phadtare 1997: 62, pl 13, figs 13-14, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant & Tapaswi 2001: 129, EARLY EOCENE (Surat lignite, Cambay Shale, Parvati Group), Bikaner District, Rajasthan.

Tetra

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Tetracolporopollenites obscurus Pflug & Thomson in Thomson & Pflug = Sapotaceoidaepollenites cauveriensis Saxena.


Tetracolporopollenites sp. Saxena & Rao 1996: 52, pl 1, fig 20, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.


Tetrapollis sp. Ramanujam et al. 1992: 22, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.


Thomsonipollis sp. Saxena & Misra 1990: 265, pl 1, fig 10, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra.


Thomsonipollis sp. Ramanujam et al. 1992: 22, fig 3U, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

Thomsonipollis sp. Ramanujam et al. 1992: 22, fig 3U, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala.

THYMELAEPOLLIS Sah & Kar, PERIPORITI.

Thymelaepollis crotonoidis Sah & Kar. Kar & Bhattacharya 1992: 251, pl 1, figs 6, 10, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Mandaokar 2002b: 21, pl 1, figs 7, 9, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland.


Thymelaepollis sp. Singh et al. 1992: 57, pl 2, fig 12, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

TILIAEPOLLENITES Potonié, PTYCHOTRIPORINES.
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Tiliaepollenites foveolatus Venkatachala & Rawat. Kumar et al. 2001: 245, EARLY-MIDDLE MIocene (Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam.

Tiliaepollenites rotundus Venkatachala & Rawat. Kumar et al. 2001: 244, OLIGOCENE (Barail Group), Tinali Well-7, Upper Assam.

Tiliaepollenites cf. rotundus Venkatachala & Rawat. Mandal & Kumar 2000: 204, pl 1, fig 1, MIo-Pliocene (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam.

Tiliaepollenites sp. A. Kumar & Takahashi 1991: 569-570, pl 18, fig 6, LATE LATE MIocene (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Tiliaepollenites sp. B. Kumar & Takahashi 1991: 570, pl 14, fig 7, pl 18, fig 21, MIocene (Upper Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam.

Tiliaepollenites sp. Kumar 1994: 83, pl 44, fig 25, pl 46, fig 20, LATE MIocene (Bokabil Formation), Silchar-Haflong Road Section, Assam.

Tiliaepollenites sp. B. Kumar 1994: 71, pl 38, fig 7, EARLY-MIDDLE MIocene (Bhuban Formation), Silchar-Haflong Road Section, Assam.

Tiliaepollenites sp. Mandal & Kumar 2000: 204, pl 2, fig 14, MIo-Pliocene (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam.

Tinalipollenites Mandal & Kumar, Ptychotriporines.

Tinalipollenites dutiae Mandal & Kumar 2000: 205, pl 1, figs 8-10, MIo-Pliocene (Namsang Formation), Tinali Well-7, Tinali Oilfield, Upper Assam.

Tiwariasporis Maheshwari & Kar, ORNATI.

Tiwariasporis sp. Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam (Reworked).

Todisporites Couper, LAEVIGATI.


Todisporites giganticus in Mandaokar 1993: 139, pl 1, fig 19, pl 2, fig 13, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Mandaokar 1999: 241, MIARGEOLOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2002b: 21, MIARGEOLOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandaokar 2003: 188, EARLY MIocene (Middle Bhuban Formation), Lawngtlai, Chhimtuirupi District, Mizoram. Nomen nudum.

Todisporites kutchensis Sah & Kar. Kar 1990a: 175, pl 1, fig 19, MIocene (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar
1990b: 237, LATE OLIGOCENE (Renji Formation), Silchar-Haflong Road Section, Assam; Kar & Bhattacharya 1992: 251, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Tripathi 1995: 46, PALAEOCENE-OLIGOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwai Bibra area, East Garo Hills District, Meghalaya; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeyapore Colliery, Dilli-Jeyapore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 43, pl 1, fig 13, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Kar & Sharma 2001: 128, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Singh & Kar 2003: 219, pl 2, fig 6, PALAEOCENE (Deccan Intertrappean Beds), northeast of Popro, Lalitpur District, Uttar Pradesh; Tripathi et al. 2003: 91, LATE PALAEOCENE (Akli Formation), Barmer Basin, Rajasthan; Saxena & Khare 2004: 73, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

_Todisporites major_ Couper. Kar 1990a: 175, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 232, 233, 234, 237, 239, EOCENE-EARLY MIOCENE (Disang, Laisong, Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Singh 1990: 218, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Singh & Tripathi 1990: 329, MIOCENE (Siwalik sediments), Arunachal Pradesh; Kumar & Takahashi 1991: 601, pl 9, fig 2, MIDDLE MIOCENE (Middle Bhuban Formation), Silchar-Haflong Road Section, Assam; Mandaokar 1991: 26, EARLY MIOCENE, north of Maibong Railway Station, North Cachar Hills District, Assam; Sarkar 1991: 3, EARLY EOCENE (Kakara Series), near Kakara-Chapla group of villages, north of Gambhur River, Shimla District, Himachal Pradesh; Kar & Bhattacharya 1992: 251, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Mandaokar 1993: 139, pl 2, figs 11, 14, 18, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 40, 64, pl 10, fig 1, pl 28, figs 1, 3, MIDDLE OLIGOCENE and EARLY-MIDDLE MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam; Singh & Sarkar 1994: 50, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Rao 1995a: 327, pl 1, fig 2, EOCENE-EARLY MIOCENE, Kalarakod and Nirkunnam Boreholes, Alleppey District, Kerala; Tripathi 1995: 46, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Mandal et al. 1996: 78, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeyapore Colliery, Dilli-Jeyapore Coalfields, Dibrugarh District, Assam; Rao & Rajendran 1996: 65, MIOCENE, Cannanore District, Kerala; Saxena et al. 1996: 21, PALAEOCENE (Tura Formation), Nongwai Bibra area, East Garo Hills District, Meghalaya; Mandal 1997: 99, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Samant & Phadtare 1997: 13, pl 2, figs 7-8, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Sarkar 1997: 109, pl 2, fig 6, EOCENE (Subathu Formation), 20 km southeast of Bilaspur on Shimla-Bilaspur Highway, Bilaspur District, Himachal Pradesh; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramrikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeyapore Colliery, Dilli-Jeyapore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 7, pl 2, fig 1, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh.
Pradesh; Rao 2000: 295, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Samant 2000: 114, pl 1, fig 11, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat; Sarkar & Prasad 2000a: 171, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), Koshalia Nala Section near Koti, Shimla Hills, Solan District, Himachal Pradesh; Sarkar & Prasad 2000b: 147, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Gagggar river near Kharak village, Morni Hills, Haryana; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Mandaokar 2002c: 79, EARLY MIocene (Keifang Formation), eastern flank of Aizawl Hills, Mizoram; Singh & Kar 2002: 214, PALAEOCENE (Deccan Intertrappean Beds), 3 km northeast of Papiro village, Laitipur District, Uttar Pradesh; Singh & Kar 2003: 219, PALAEOCENE (Deccan Intertrappean Beds), northeast of Papiro, Laitipur District, Uttar Pradesh; Singh et al. 2003: 197, 203, pl 2, fig 7, YPRESIAN-POST LUTETIAN (Subathu Formation), around Dharampur and Koti areas, Solan District, Himachal Pradesh.

Todisporites minor Couper. Saxena & Misra 1990: 264, pl 3, fig 3, NEOGENE (Ratnagiri Beds), Amberiwaedi Section, Sindhudurg District, Maharashtra; Singh 1990: 218, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Kumar & Tahakashi 1991: 601, pl 9, fig 7, pl 13, figs 9, 12, MIDDLE MIocene (Middle Bhuban Formation), Sylchar-Haflong Road Section, Assam; Kar & Bhattacharya 1992: 251, EARLY EOCENE, Gujra Dam Section and Akriignite, Kutkh District, Gujarat; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 185, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 40, 64, 75, 87, 95, pl 8, fig 7, pl 10, fig 5, pl 30, fig 11, pl 34, fig 7, pl 36, fig 7-8, MIDDLE OLIGOCENE and MIocene-Pliocene (Jenam, Bhuban, Bokab and Tipam formations), Silchar-Haflong Road Section, Assam; Singh & Sarkar 1994: 50, pl 1, fig 7, EARLY MIocene (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh; Rao 2000: 295, pl 2, fig 4, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Sarkar & Prasad 2000a: 171, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), Koshalia Nala Section near Koti, Shimla Hills, Solan District, Himachal Pradesh; Sarkar & Prasad 2000b: 147, LATE YPRESIAN-MIDDLE LUTETIAN (Subathu Formation), west bank of Gagggar river near Kharak village, Morni Hills, Haryana; Saxena 2000c: 163, pl 1, figs 4-5, MIocene (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Saxena & Sarkar 2000: 257, MIDDLE EOCENE (Siju Formation), Simsang River Section near Siju, South Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam; Gupta et al. 2003: 210, PALAEOCENE-EOCENE, Ganga Basin.


Todisporites sp. Singh et al. 1992: 56, pl 1, fig 2, MIocene (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

Todisporites sp. Bera & Banerjee 1995: 150, MID-DLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

Todisporites. Sharma 2000: 54, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan; Srivastava & Bhattacharyya 2000: 375, pl 1, fig 1, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Kimin-Ziro Road Section, Lower Subansiri District, near Ritu village, West Siang District and Pasighat to Rengging Section, East Siang District, Arunachal Pradesh.

TRANSDANUBIAEPOLLENITES Kedves & Pardutz, TRIPTYCHES.

Transdanubiaepollenites indicus Singh 1991: 702, figs 2a-h, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 57, pl 2, fig 18, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

TRIANGULORITES Kar, TRIPORINES.

Triangulorites bellus (Sah & Kar) Kar = Grevilloideaepites eocenicus Biswas.

Triangulorites foveolatus Ambwani 1993: 158, fig 5C, PALAEOCENE, Seam No. 2, Rekmangiri Coalfield, Garo Hills, Meghalaya.

Triangulorites inferius (Dutta & Sah) Kar & Kumar = Grevilloideaepites inferius (Dutta & Sah) Singh & Misra.

Triangulorites minutus (Sah & Kar) Kar. Samant 2000: 115, pl 6, fig 11, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

Triangulorites pachypeinus Kar & Kumar = Grevilloideaepites pachypeinus (Kar & Kumar) Singh & Misra.

Triangulorites triradiatus (Saxena) Kar. Kar 1990a: 178, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Saxena 1995: 101, fig 45, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala.

Triangulorites sp. Saxena & Khare 2004: 75, 84, pl 1, fig 20, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

TRIANGULOTRICOLPORITES Kar, PTYCHOTRIPORINES.


TRIATRIOPOLLENITES Pflug in Thomson & Pflug, TRIPORINES.


TRIBREVICOLPORITES Kar, PTYCHOTRIPORINES.

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**Tricollareporites duttae** Rao & Rajendran 1996: 72, pl 1, figs 21-22, MIOCENE (Quilon Formation), Meenkunnu Phase I, Cannanore District, Kerala.

**Tricollareporites eocenicus** Kar. Kumar 1996: 114, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Mandal 1997: 100, pl 1, fig 20, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland.

**Tricollareporites sarkarii** Rao & Rajendran 1996: 72, pl 3, figs 3-4, MIOCENE (Quilon Formation), Meenkunnu Phase II, Cannanore District, Kerala; Rao 1996: 157, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala.

**Tricollareporites sp.** Rao 1996: 157, pl 1, fig 6, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala.

**Tricollareporites sp.** Rao & Rajendran 1996: 72, pl 2, fig 23, MIOCENE (Quilon Formation), Meenkunnu Phase I, Cannanore District, Kerala.

**TRICOLPITES** Couper, **TRIPTYCHES.**

**Tricolpites baculatus** Jain et al. = **Albertipollenites baculatus** (Jain et al.) Mandal & Rao.

**Tricolpites baculatus** Kar & Jain (non Jain et al. 1973) = **Tricolpites keralaeensis** Saxena.

**Tricolpites baculatus** Kar & Jain = **Dipterocarpuspollenites retipilatus** (Kar & Jain) Kar.

**Tricolpites brevicolpus** Couper. Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin.

**Tricolpites crassireticulatus** Dutta & Sah = **Retitricolorites crassireticulatus** (Dutta & Sah) Samant & Phadtare (according to Samant & Phadtare 1997).

**Tricolpites crassireticulatus** Dutta & Sah = **Albertipollenites crassireticulatus** (Dutta & Sah) Mandal & Rao (according to Mandal & Rao 2001).

**Tricolpites crassisexinus** Venkatachala & Rawat = **Albertipollenites crassireticulatus** (Dutta & Sah) Mandal & Rao.

**Tricolpites delicatus** Couper. Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Gupta et al. 2003: 211, PALAEOCENE-EOCENE, Ganga Basin.
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Retitricolpites delicatus Kar 1979: 28, pl 2, figs 31-32, OLIGOCENE (Maniyara Formation), Kutch District, Gujarat.


Tricolpites foxii (Biswas) Ramanujam. Bera & Banerjee 1995: 150, MIDDLE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal.

Tricolpites globus Dutta & Sah = Rousea globus (Dutta & Sah) Mandal & Rao.

Tricolpites cf. globus Dutta & Sah. Kumar & Takahashi 1993: 570-571, pl 8, fig 13, EARLY MIOCENE (Lower Bhutan Formation), Silchar-Haflong Road Section, Assam.

Tricolpites gracilis Salujha et al. = Albertipollenites gracilis (Salujha et al.) Mandal & Rao.

Tricolpites horridus Salujha et al. = Retitrescolpites horridus (Salujha et al.) Mandal & Rao.

Tricolpites iniquus Salujha et al. = Foveotricolpites iniquus (Salujha et al.) Mandal & Rao.


Tricolpites levis Sah & Dutta. Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khasi Hills, Meghalaya; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Kar et al. 1994: 187, pl 2, fig 7, TERTIARY, subsurface sediments in Upper Assam; Tripathi 1995: 47, pl 1, fig 4, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan.


Tricolpites matanomadhensis Saxena = Rousea matanomadhensis (Saxena) Mandal & Rao.

Tricolpites medius Sah. Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Mandaokar 2002c: 79, EARLY MIOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.

Tricolpites microreticulatus Belesky et al. Trivedi & Saxena 2000: 275, pl 2, fig 12, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam (junior homonym of Tricolpites microreticulatus van der Hammen 1954).

Tricolpites minor Sah. Kumar & Takahashi 1991: 571, pl 1, fig 16, pl 15, figs 3, 8, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam; Shanmukhappa & Koshal 1993: 200, 201, 202, MIDDLE-LATE EOCENE (Ankleshwar Formation), Gandhar area, Broach Depression, Cambay Basin, Gujarat; Kumar 1994: 19, 71, 94, pl 4, fig 7, EARLY OLIGOCENE and MIOCENE-PLIOCENE...
Tricolpites minutus Sah & Kar. Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Saxena et al. 1996: 21, pl 3, fig 17, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Mandaokar 2000a: 181, pl 1, fig 17, pl 2, fig 18, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Saxena & Khare 2004: 75, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Tricolpites minutus Jain et al. (non Sah & Kar 1970) = Tricolpites jainii Saxena.


Tricolpites perforatus van der Hammen & Garcia de Muts. Rao 2000: 295, pl 2, fig 11, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya.

Tricolpites reticulatus Saxena = Albertipollenites reticulatus (Saxena) Mandal & Rao.

Tricolpites reticulatus Cookson ex Couper. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura; Kar 1990b: 236, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam; Mandal 1990: 325, PALAEOCENE (Lakadong Sandstone Member, Sylhet Limestone Formation), Thanjinath, Khisi Hills, Meghalaya; Saxena & Misra 1990: 265, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra; Singh 1990: 219, PALAEOCENE (Tura Formation), Langrin Coalfield, Khisi Hills, Meghalaya; Kumar & Takahashi 1991: 571, pl 5, figs 9, 18, pl 12, fig 14, pl 15, fig 12, pl 18, fig 3, MIDDLE OLIGOCENE and MIDDLE-LATE MIOCENE (Jenam, Middle-Upper Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Kar & Bhattacharya 1992: 251, pl 2, figs 12, 17, 21, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Ambwani 1993: 159, 160, PALAEOCENE-EARLY EOCENE, Seam Nos. 2 and 3, Rekangmigiri Coalfield, Garo Hills, Meghalaya; Hatt & Banerjee 1994: 115, pl 1, fig 14, EARLY MIOCENE, near Suangpulawn village about 20 km northeast of Aizawl, Mizoram; Kar et al. 1994: 187, pl 1, fig 10, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 35, 48, 61-62, 71, 83, 94, pl 17, figs 14, 21, pl 18, figs 2, 7, pl 23, figs 18-19, pl 33, fig 22, pl 46, fig 19, MIDDLE OLIGOCENE-PLIOCENE (Jenam, Renji, Bhuban, Bokabil and Tipam formations), Silchar-Haflong Road Section, Assam; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Bera & Banerjee 1995: 150, MIDDLE-LATE EOCENE (Bengal lignite), Panagarh-Domra Sector, Burdwan District, West Bengal; Rao 1995a: 328, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala; Saxena 1995: 98, figs 3, 32, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala; Kumar 1996: 114, pl 1, fig 5, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Rao & Rajendran 1996: 66, MIOCENE, Cannanore District, Kerala; Saxena & Rao 1996: 48, pl 3, fig 10, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Mandaokar 2000a: 320, EARLY MIOCENE (Bhuban Formation), Ramkikawn near Chandmari, Aizawl District, Mizoram; Mandaokar 2000b: 181, pl 2, figs 21, 49, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, pl 1, fig 1, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh; Mitra et al. 2000: 126, pl 1, fig 32, NEOGENE (Siwalik Group), Darjeeling foothills, Eastern Himalaya; Rao 2000:
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295. OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Saxena 2000c: 163, pl 1, fig 13, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Kar & Sharma 2001: 129, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2003: 188, EARLY MIOCENE (Middle Bhuban Formation), Lawngtlai, Chhimtuipui District, Mizoram; Chakraborty 2004: 116, EARLY MIOCENE (Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam; Mandaokar 2004: 146, LATE PALAEOCENE (Keifang Formation), eastern flank of Aizawl Hills, Mizoram.

Tricoplites triangulatus Venkatachala & Sharma (non Sah 1967) = Tricoplites venkatachalae Saxena.


Tricoplites sp. Kar 1990a: 190, pl 1, fig 93-98, MIOCENE (Surma and Tipam groups), Rokhia Bordehole No. 1, Gojalia Bordehole No. 1 and Baramura Bordehole No. 2, Tripura.


Tricoplites sp. 1. Saxena & Misra 1990: 265, pl 2, fig 1, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra.

Tricoplites sp. 2. Saxena & Misra 1990: 265, pl 1, fig 15, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra.

Tricoplites sp. 3. Kumar & Takahashi 1991: 572, pl 2, fig 15, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam.


Tricoplites triangularis Venkatachala & Sharma (non Sah 1967) = Tricoplites venkatachalae Saxena.
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**Tricollpites sp.** Sarkar et al. 1994: 202, pl 2, fig 14, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttaranchal.

**Tricollpites sp.** Singh & Sarkar 1994: 50, pl 1, fig 22, EARLY MIOCENE (Kasauli Formation), Kasauli, Solan District, Himachal Pradesh.

**Tricollpites sp.** Tripathi 1995: 47-48, pl 1, fig 12, PALAEocene-EOcENE, Well MK-327 near Kapurdi, Barmer District, Rajasthan.

**Tricollpites sp.** Kumar 1996: 114, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

**Tricollpites sp.** Mandaokar 2000c: 45, pl 2, fig 8, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh.

**Tricollpites sp.** Mandaokar 2000b: 183, pl 2, figs 31, 38, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

**Tricollpites sp.** Mehrotra et al. 2000: 153, LATE EOCENE (Kopili Formation), Upper Assam.

**Tricollpites.** Sharma 2000: 54, LATE PALAEOCENE, Borehole No. 125, Bithnok area, Bikaner District, Rajasthan.

**cf. Tricollpites sp. B.** Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**cf. Tricollpites sp.** Kar 1990a: 190, pl 5, fig 89, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura.

**TRICOLPORITES** Biswas, TRIPTYCHES.

**Tricollporites aquifoliaceaformis** Biswas = **Albertipollenites aquifoliaceaformis** (Biswas) Mandal & Rao.

**Tricollporites proboscideus** Biswas = **Albertipollenites proboscideus** (Biswas) Mandal & Rao.

**Tricollporites prolatus** Baksi = **Ladakhipollenites prolatus** (Baksi) Mandal & Rao.

**Tricollporites shortii** Baksi = **Ladakhipollenites shortii** (Baksi) Mandal & Rao.

**Tricollporites sijuensis** Baksi = **Foveotricollpites sijuensis** (Baksi) Mandal & Rao.

**TRICOLPORLENITES** Pflug & Thomson in Thomson & Pflug, TRIPTYCHES.

**Tricollporlenites minutus** (González Guzmán) Takahashi & Jux. Kumar 1994: 72, 94, pl 38, fig 18, MIOCENE-PLIOCENE (Bhuban and Tipam formations), Silchar-Haflong Road Section, Assam.

**Tricollporlenites cf. minutus** (González Guzmán) Takahashi & Jux. Kumar & Takahashi 1991: 572, pl 15, fig 13, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Tricollporate pollen Type 1.** Rao & Nair 1998: 52, pl 1, fig 12, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala.

**Tricollporate pollen Type 2.** Rao & Nair 1998: 53, pl 1, fig 5, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala.

**TRICOLPORITES** van der Hammen, PROLATI.

**Tricollporites sp.** Ambwani 1993: 157, PALAEOCENE, Seam No. 1, Rekmangiri Coalfield, Garo Hills, Meghalaya.

**Tricollporites spp.** Misra & Kapoor 1994: 152, 154, pl 1, fig 17, pl 3, fig 44, PALAEocene-EARLY EOCENE (Subathu and Basal Dhardmsala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh.
TRICOLPOROCOLUMELLITES Kar, PYCHOTRIPORINES.

Tricolporocolumnellites eocenicus Samant & Phadtare 1997: 63, pl 14, figs 1-5, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat.


TRICOLPOROPILITES Kar, PYCHOTRIPORINES.

Tricolporopilites differentialis Singh & Misra 1991a: 67-68, pl 3, figs 1-4, 7-9, 11-12 text-fig 3, MIOCENE (Cuddalore Formation), Boorehole No. NLE-35, Mine II area, Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 57, pl 2, fig 16, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu; Mandal 1997: 100, pl 2, fig 10, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Rao & Nair 1998: 52, pl 1, fig 3, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala.

Tricolporopilites magnus Acharya 2000: 24, pl 1, figs 11, 13, EARLY EOCENE, Borehole No. MII 128 (depth 129.2-129.5 m), Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu.


Tricolporopilites robustus (Kar & Saxena) Kar. Saxena 1991a: 370, fig 4, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala; Kar et al. 1994: 187, pl 2, fig 37, TERTIARY, subsurface sediments in Upper Assam; Saxena 1995a: 99, figs 2, 4-5, 9, 24, 37, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala (Reworked); Kumar 1996: 114, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Samant 1994: 49, EARLY EOCENE (Bharanagar lignite, Kharaslia Clay Formation), South Cambay Basin, Gujarat (wrongly spelt as Tricolporopilites robustus); Mandal et al. 1996: 81, MIDDLE-LATE EOCENE, mud volcano in Baratang Island, Andaman and Nicobar Islands; Mandal 1997: 99, pl 2, fig 6, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Samant & Phadtare 1997: 64, pl 14, figs 6-9, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Mandaokar 2000b: 183, pl 2, fig 5, LATE OLIGOCENE (Tikak Parbat For-
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Tricolporopollenites exaltus in Mandaokar 2000c: 45, pl 2, fig 9, LATE OLIGOCENE (Tikak Parbat Formation), Namchik River Section, Changlang District, Arunachal Pradesh. Nomen nudum.


Tricolporopollenites sp. Mandaokar 2000a: 320, EARLY MIOCENE (Bhutan Formation), Ramriukaw near Chandmari, Aizawl District, Mizoram.

TRICOLPOROPOLLIS Dutta & Sah, PTYCHOTRIPORINES.

Retittribevicolporites Kar 1985.

Tricolporopollis alleppeyensis Rao & Rajendran 1996: 73, pl 3, figs 1-2, 17, MIOCENE (Quilon Formation), Meenmunnu Phase II, Kannanore District, Kerala; Rao 1996: 157, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Nair 1998: 52, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala.

Tricolporopollis kannanorensis Rao & Rajendran 1996: 72-73, pl 2, figs 6-8, MIOCENE (Quilon Formation), Meenmunnu Phase I, Kannanore District, Kerala; Rao & Nair 1998: 52, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala.


Tricolporopollis matanomadhensis (Venkatachala & Kar) Tripathi & Singh. Rao 1990: 248, pl 2, fig 16, EOCENE-EARLY MIocene, Arthungal Borehole, Alleppey District, Kerala; Saxena & Misra 1990: 265, NEOGENE (Ratnagiri Beds), Amberiwdi Section, Sindhudurg District, Maharashtra; Rao 1995a: 328, EOCENE-EARLY MIocene, Kalarakod and Nirkunnam Boreholes, Alleppey District, Kerala; Tripathi 1995: 47, pl 1, fig 7, PALAEOCENE-EOCENE, subsurface sediments near Kapurdi, Barmer District, Rajasthan; Rao 1996: 157, EARLY MIocene, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala; Rao & Rajendran 1996: 66, MIocene, Cannanore District, Kerala; Saxena et al. 1996: 21, pl 3, fig 2, PALAEOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Rao & Nair 1998: 52, MIocene, Kannanellur-Kundra Road area, Quilon District, Kerala; Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Saxena 2000c: 163, pl 1, fig 8, MIocene (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Trivedi & Saxena 2000: 275, pl 1, fig 4, LATE EOCENE (Kopili Formation), Umrongo-Haflong Road near Umronggo, North Cachar Hills District, Assam; Mandaokar 2002b: 21, pl 1, fig 5, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Saxena & Khare 2004: 75, LATE PALAEOCENE-MIDDLE EOCENE, Jayamkondacholapuram Well 12, Tiruchirapalli District, Tamil Nadu.

Retitribreicolporites matanomadhensis (Venkatachala & Kar) Singh 1990: 220, pl 2, fig 13, PALAEOCENE (Tura Formation), Langrin Coalfield, Khasi Hills, Meghalaya; Saxena 1991: 369, EARLY MIocene, Varkala and Kundra Clay mines, Kerala; Kar & Bhattacharya 1992: 251, pl 2, fig 34, EARLY EOCENE, Rajpardi lignite mine, Cambay Basin, Gujarat; Kumar 1994: 206, PALAEOCENE (Lakadong Sandstone), Jarain and Laitrymbai, Jaintia Hills District, Meghalaya; Saxena 1995: 99, MIocene (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala (Reworked); Kumar 1996: 112, pl 1, figs 2, 7, 19, 23, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat; Mandal 1997: 100, pl 2, fig 8, LATE EOCENE (Barail Group), Mariani-Mokokchung Road, Mokokchung District, Nagaland; Acharya 2000: 22, EARLY EOCENE, Borhole No. MII 128, Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu; Samant & Tapaswi 2001: 129, pl 2, fig 10, EARLY EOCENE (Surat lignite, Cambay Shale Formation), Tarkeshwar, Surat District and Valia, Bharuch District, Gujarat; Chakraborty 2004: 116, LATE PALAEOCENE.
(Lakadong Sandstone), around Bhalukurung, North Cachar Hills, Assam.


Tricolporopollis sindhudurgensis Rao 2004: 125, pl 3, figs 1-3, MIOCENE (Sindhudurg Formation), Kalviwadi, Sindhudurg District, Maharashtra.


Tricolporopollis sp. Tripathi 1995: 48, pl 1, fig 9, PALAEocene-Eocene, subsurface sediments near Kapurdi, Barmer District, Rajasthan.

Tricolporopollis sp. Kumar 1996: 114, EARLY Eocene (Tarkeshwar Formation), Rajpardi, Bharuch District, Gujarat.

Tricolporopollis sp. Trivedi & Saxena 2000: 275, Late Eocene (Kopili Formation), Umrongs-Haflong Road near Umrongso, North Cachar Hills District, Assam.


TRIFOSSAPOLLENITES Rouse, praecolpates.

Trifossapollenites constatus Dutta & Sah = Ladakhipollenites constatus (Dutta & Sah) Mandal & Rao.

?Trifossapollenites constatus Dutta & Sah. Kumar 1994: 77, Early-Middle MIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam.

TRILATIPORITES Ramanujam ex Potonié, TRiporines.

Trilatiporites cooksoniae Ramanujam = Dorreenipites cooksoniae (Ramanujam) Navale & Misra.

Trilatiporites erdtmanii Ramanujam = Dorreenipites erdtmanii (Ramanujam) Navale & Misra.

Trilatiporites kutchensis Venkatachala & Kar = Retitrilatiporites kutchensis (Venkatachala & Kar) Misra et al.


Trilatiporites minutus Sah & Kar = Retitrilatiporites minutus (Sah & Kar) Misra et al.

Trilatiporites norennii Ramanujam = Dorreenipites erdtmanii (Ramanujam) Navale & Misra.

Trilatiporites sellingii Ramanujam = Dorreenipites sellingii (Ramanujam) Navale & Misra.


Trilete spores. Kumar 1994: 22, 77, pl 3, fig 16, pl 34, figs 5-6, 8, pl 35, fig 4, EARLY OLIGOCENE and EARLY-MIDDLE MIOCENE (Laisong and Bhuban formations), Silchar-Haflong Road Section, Assam.


Trilete spore type 1. Saxena & Bhattacharyya 1990: 110, pl 1, figs 7, 11, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Manjhi Khad Section near Dharmsala, Kangra District, Himachal Pradesh.

Trilete spore type 2. Saxena & Bhattacharyya 1990: 110, pl 1, figs 12, 16-18, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Churan Khad Section near Dharmsala, Kangra District, Himachal Pradesh.


TRIORITES Erdtman ex Cookson, TRIPORINES.


Triorites indicus Mathur & Mathur 1980: 58-59, pl 1, fig 16, EARLY OLIGOCENE (Upper Baratang Formation), Bakultala-Ranagat Section, Middle Andaman, Andaman and Nicobar Islands.

Triorites bellus Sah & Kar = Grevilloideaepites eocenicus Biswas.

Triorites indicus Mathur & Mathur (non Thiergart & Frantz 1963) = Triorites andamanensis Saxena.

Triorites inferius Dutta & Sah = Grevilloideaepites inferius (Dutta & Sah) Singh & Misra.


Triorites triangulus Sah & Kar 1970 (non Sah 1967): 139, pl 2, fig 53, EARLY EOCENE (Naredi Formation), Kutch District, Gujarat.

Triorites protrudus Samant 2000: 110, 114, pl 6, fig 12, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

Triorites quilonensis Rao & Nair 1998: 53, pl 1, figs 16-17, MIOCENE, Kundra Clay Mine Section, Quilon District, Kerala.

Triorites sahii Samant 2000: 114, pl 6, fig 13, EARLY EOCENE (Kharsalia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.

Triorites triangulus Sah & Kar (non Sah 1967) = Triorites kutchensis Saxena.
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**Triorites sp.** Ramanujam et al. 1991: 3, pl 3, fig 12, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala.

**Triorites sp.** Ramanujam et al. 1992: 22, fig 3R, EARLY MIOCENE (Mayyanad and Quilon formations), Kallaikode Borewell, Quilon District, Kerala.


**Triorites sp.** Kapoor et al. 2003: 183, OLIGOCENE-NEOGENE (Dharmsala and Siwalik), Dharmsala and Nurpur areas, Kangra District, Himachal Pradesh.

**TRIPLANOSPORITES** Kar, TRIPORINES.

**Triplanosporites sinuosus** Pflug in Thomson & Pflug, LAEVIGATI.


**Triporate pollen** Kar et al. 1994: 187, pl 2, fig 2, TERTIARY, subsurface sediments in Upper Assam.

**TRIPORIPITES** Biswas, TRIPORINES.

**Triporate pollen** Kar et al. 1994: 187, pl 2, fig 2, TERTIARY, subsurface sediments in Upper Assam.
EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

Triporipites betulaceaeformis Biswas 1962: 45, pl 10, fig 11, EARLY-MIDDLE EOCENE (Sylhet Limestone Formation), Therriaghat, Shillong Plateau, Meghalaya.

Triporipites exactus Salujha et al. 1991: 67, pl 2, fig 52, NEOGENE, Adamtila Well-A, Cachar District, Assam; Mandaokar 2000b: 181, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 1993: 139, pl 1, fig 34, pl 2, fig 23, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Mandaokar 1999: 241, LATE EOCENE (Disang Group), Tirap River Section, Tinsukia District, Assam; Mandaokar 2000b: 181, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.


Triporipollene vimalii Sah & Dutta. Saxena et al. 1996: 21, pl 3, fig 10, PALAEOCENE-MIDDLE EOCENE (Tura Formation), Nongwal Bibra area, East Garo Hills District, Meghalaya; Tripathi et al. 2000: 245, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya.

Triporipollene sp. Kumar & Takahashi 1991: 573, pl 5, figs 5, 20-21, MIDDLE OLIGOCENE (Jenam Formation), Silchar-Haflong Road Section, Assam.


Triporipollene sp. Kar & Bhattacharya 1992: 258, pl 2, fig 3, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat.

Triporipollene sp. Trivedi & Saxena 2000: 275, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.
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**Triporopollenites sp.** Kumar et al. 2001: 245, fig 5.7, EARLY-MIDDLE MIOCENE (Surma and Tipam groups excluding Girujan Clay Formation), Tinali Well-7, Upper Assam.

cf. **Trisyncolpites sp.** Kar in Saxena 1995: 97, figs 10, 46, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala.

**Trisyncolporate pollen type 1.** Mandal et al. 1994: 211, pl 1, fig 11, EARLY EOCENE, Kadamtala, Andaman and Nicobar Islands.

**TROCHOSPORITES** Wilson, POLYSACCITES.

**Trochosporites tripus** Venkatachala & Kar. Mandal et al. 2003: 102, pl 2, fig 5, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**Trochosporites sp.** Kar 1990a: 181, MIOCENE (Surma and Tipam groups), Rokhia Boreshole No. 1, Gojalia Boreshole No. 1 and Baramura Boreshole No. 2, Tripura.

**TSUGAEPOLLINITES** Potonié & Venitz ex Potonié, SACCIZONA TI.

**Tsugaepollenites velatus** Kar. Kar 1990b: 236, 237, 240, MIDDLE OLIGOCENE-EARLY MIOCENE (Jenam, Renji and Bhuban formations), Silchar-Haflong Road Section, Assam; Banerjee & Nandi 1994: 219, pl 1, fig 18, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Kar et al. 1994: 186, TERTIARY, subsurface sediments in Upper Assam; Sarkar et al. 1994: 201, pl 2, fig 15, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand; Mandal & Vijaya 2004: 497, fig 5B, LATE OLIGOCENE-EARLY MIOCENE, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

**Tsugaepollenites sp.** Singh et al. 1991: 42, pl 2, figs 4, 13, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

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**Triporopollenites sp.** Gupta et al. 2003: 211, pl 1, fig 12, PALAEOCENE-EOCENE, Ganga Basin.

**TRIPOROTETRADITES** van Hoeken-Klinkenberg, TETRADITES.

**Triporotetradites sp.** Saxena & Misra 1990: 265, pl 2, fig 8, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra.

**TRIPOROTETRADITES** van Hoeken-Klinkenberg, TETRADITES.

**Triporotetradites sp.** Saxena & Misra 1990: 265, pl 2, fig 8, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra.

**TRIPOROTETRADITES** van Hoeken-Klinkenberg, TETRADITES.

**Triporotetradites sp.** Saxena & Misra 1990: 265, pl 2, fig 8, NEOGENE (Ratnagiri Beds), Amberi wadi Section, Sindhudurg District, Maharashtra.

**TRISYNCPOLPITES** Kar, TRIPTYCHES.

**Trisyncolpites ramanujamii** Kar. Ramanujam et al. 1989: 29, pl 1, fig 13, MIOCENE, subsurface sediments of eastern coast of southern India; Rao 1990: 246, pl 2, fig 20, EOCENE-EARLY MIOCENE, Arthungal Boreshole, Alleppey District, Kerala; Rao 1995a: 328, pl 3, fig 5, EOCENE-EARLY MIOCENE, Kalarakod Boreshole, Alleppey District, Kerala; Mandaokar 1996b: 41, LATE OLIGOCENE (Tikak Parbat Formation), Dilli-Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000b: 181, pl 2, fig 55, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam; Mandaokar 2000c: 38, LATE OLIGOCENE (Tikak Parbat Formation), Nambik River Section, Changlang District, Arunachal Pradesh; Mandaokar 2002a: 116, EARLY MIOCENE (Dulte Formation), 2 km from Dulte village on Dulte-Keifang Road, Aizawl District, Mizoram; Mandaokar 2002b: 21, LATE OLIGOCENE (Tikak Parbat Formation), Borjan Coalfield, Nagaland; Mandal & Vijaya 2004: 497, LATE OLIGOCENE-EARLY MIOCENE, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

**Trudopollis** Pflug, TRIPORINES.


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**TRUDOPOLLIS** Pflug, TRIPORINES.

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**TUBERCULOZONISULCITES** Kar & Sharma, SPHAEROZONISULCATES.

Tuberculozonisulcites retibaculatus Kar & Sharma 2001: 129, 132, pl 3, figs 7, 8, 11, LATE PALAEOCENE-EARLY EOCENE (Palana Formation), Bikaner-Nagaur area, Bikaner District, Rajasthan.


**UMBELLIFEROIPOLLENITES** Venkatachala & Kar, SUBPROLATI.


**Umbelliferopollenites typicus** Samant & Phadtare 1997: 65, pl 14, figs 12-13, EARLY EOCENE (Tarkeshwar Formation), Rajpardi, Cambay Basin, Gujarat; Samant 2000: 115, pl 6, fig 8, EARLY EOCENE (Kharasia Clay Formation), near Bhavnagar, Cambay Basin, Gujarat.


**UNDULATISPORITES** Pflug in Thomson & Pflug, LAEVIGATI.


**Unidentified forams.** Mandal et al. 1996: 78, pl 1, figs 25-26, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands.

**Unidentified pollen.** Mandal et al. 1996: 78, pl 1, figs 19-20, age not mentioned, mud volcano in Baratang Island, Andaman and Nicobar Islands.

**VALLATISPORITES** Hacquebard, CINGULATI.

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pl 2, figs 3-5, EARLY EOCENE (Panna Formation), Bombay Offshore, Arabian Sea (Reworked).

**Vallatisporites spp.** Misra & Kapoor 1994: 158, pl 6, figs 103-104, PALAEOCENE-EARLY EOCENE (Subathu and Basal Dharmsala), Jwalamukhi-B Well, northern part of Jwalamukhi Structure, Himachal Pradesh (Reworked).

**Vallatisporites sp.** Mehrotra et al. 2001: 241, pl 2, fig 6, EARLY EOCENE (Panna Formation), Bombay Offshore, Arabian Sea (Reworked).

**VARISCUPTINAPERTURITES** Saxena et al., TUBERINI.

_VARISCUPTINAPERTURITES sphericus_ Saxena et al. 1999: 135, pl 1, figs 1-3, text-fig 3, LATE MIOCENE, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

_Pollen Type 1._ Chandra & Kumar 1998: 67, pl 2, fig 8, LATE TERTIARY, DSDP Leg 22, Site 218, Bengal Fan, Indian Ocean.

**VARISPINITRIPORITES** Kar, TRIPORINES.

_VARISPINITRIPORITES ratariaensis_ (Kar & Saxena) Kar. Saxena & Rao 1996: 48, pl 2, figs 4, 16, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya; Rao 2000: 297, OLIGOCENE (Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya; Saxena 2000c: 163, pl 1, fig 14, pl 2, fig 15, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra.

**VELLARIPOLLIS** Singh & Misra, POLYPTYCHES.

_VELLARIPOLLIS foveolatus_ Singh & Misra 1991b: 211, pl 2, figs 5-7, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, South Arcot District, Tamil Nadu; Singh et al. 1992: 56, pl 1, fig 11, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**VERRUATELITES** Singh & Saxena, TUBERINI.

_VERRUATELITES assamicus_ Singh & Saxena. Saxena & Misra 1990: 265, pl 1, fig 20, NEOGENE (Ratnagiri Beds), Ambariwadi Section, Sindhudurg District, Maharashtra; Singh & Tripathi 1990: 326, pl 1, fig 8, MIOCENE (Siwalik sediments), Arunachal Pradesh; Kumar 1994: 72, 77, 83, pl 39, figs 2, 12, MIOCENE (Bhuban and Bokabil formations), Silchar-Haflong Road Section, Assam; Rao & Rajendran 1996: 66, pl 3, fig 12, MIOCENE, Cannanore District, Kerala; Saxena 2000c: 163, MIOCENE (Sindhudurg Formation), Mavli Mine at Redi, Sindhudurg District, Maharashtra; Rao & Patnaik 2001: 270, LATE Plioene (Pinjor Formation), Nadah, Panchkula, Haryana.

_VERRUATELITES baculatus_ Kumar 1994: 99, pl 50, figs 1, 13-14, LATE MIOCENE-PLIOENE (Dupitila Formation), Silchar-Haflong Road Section, Assam.

_VERRUATELITES cannanorensis_ Rao & Rajendran 1996: 68, pl 3, fig 7, MIOCENE (Quilon Formation), Meenkunnu Phase II, Cannanore District, Kerala.

_VERRUATELITES excellens_ Acharya 2000: 24, pl 1, figs 2, 8, EARLY EOCENE, Borehole No. MI 128 (depth 124.9-125 m), Mannargudi area, Thanjavur District, Cauvery Basin, Tamil Nadu.

_VERRUATELITES kalarakodensis_ Rao 1995a: 335, pl 2, figs 1-2, EOCENE-EARLY MIOCENE, Kalarakod Borehole, Alleppey District, Kerala.

_VERRUATELITES sp._ Saxena & Bhattacharyya 1990: 112, pl 1, fig 21, OLIGOCENE-EARLY MIOCENE (Dharmsala Group), Manjhi Khad Section near Dharmsala, Kangra District, Himachal Pradesh.

_VERRUATELITES sp._ Singh & Tripathi 1990: 326, pl 1, fig 9, MIOCENE (Siwalik sediments), Arunachal Pradesh.

_VERRUATELITES sp._ Kumar & Takahashi 1991: 573-574, pl 8, fig 7, EARLY MIOCENE (Lower Bhuban
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Formation), Silchar-Haflong Road Section, Assam.

**Verrualetes spp.** Kumar 1994: 42, 52, pl 24, fig 12, pl 25, fig 18, MIDDLE OLIGOCENE and EARLY-MIDDLE MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam.

**Verrualetes spp.** Kumar et al. 2004: 158, pl 1, fig 6, NEOGENE and PLEISTOCENE, Site 218, Deep Sea Drilling Project Leg 22, Bengal Fan, Indian Ocean.


**Verrualetes sp.** Rao 2004: 125, pl 3, fig 9, MIOCENE (Sindhudurg Formation), Kalviwadi, Sindhudurg District, Maharashtra.

**VERRUCATOSPORITES** Pflug & Thomson in Thomson & Pflug, SCULPTATOMONOLETI.

**Verrucatosporites speciosus** (Sah & Dutta) Kumar & Takahashi 1991: 602-603, pl 13, fig 4, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam.

**Polypodiisporites speciosus** Sah & Dutta. Handique et al. 1992: 219, LATE EOCENE-OLIGOCENE (Barail Group), Moran Oilfield, Upper Assam; Kumar 1994: 74, pl 34, fig 2, EARLY-MIDDLE MIOCENE-PLIOCENE (Bhuban Formation), Silchar-Haflong Road Section, Assam; Rao 1995a: 327, EOCENE-EARLY MIOCENE, Kalarakod Borhehole, Mechalalya; Mandaokar 2000: 273, pl 1, fig 8, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.

**Polypodiisporites ornatus** Sah. Kar 1990a: 176, pl 2, figs 38-40, MIOCENE (Surma and Tipam groups), Rokhia Borhehole No. 1, Gojalia Borhehole No. 1 and Baramura Borhehole No. 2, Tripura; Kar 1990b: 236, 240, MIDDLE OLIGOCENE and EARLY MIOCENE (Jenam and Bhuban formations), Silchar-Haflong Road Section, Assam; Saxena & Misra 1990: 264, NEOGENE (Ratanagiri Beds), Ambeniwadi Section, Sindhudurg District, Maharashtra; Ramanujam et al. 1991: 53, pl 1, fig 4, EARLY MIOCENE, Pattanakad Borwell, Alleppey District, Kerala; Mandaokar 1993: 139, LATE OLIGOCENE (Tikak Parbat Formation), Dangri Kumari Colliery, Dibrugarh District, Assam; Banerjee & Nandi 1994: 219, pl 1, fig 17, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Kar et al. 1994: 185, pl 1, fig 3, TERTIARY, subsurface sediments in Upper Assam; Kumar 1994: 21, 39, 63, 101, pl 2, fig 10, pl 11, fig 5, pl 12, fig 9, pl 20, figs 5, 11, pl 29, fig 2, EARLY-MIDDLE OLIGOCENE and MIOCENE-PLIOCENE (Laisong, Jenam, Bhuban and Dupitila formations), Silchar-Haflong Road Section, Assam; Sarkar et al. 1994: 201, pl 1, fig 3, LATE MIOCENE (Middle Siwalik), Bagh Rao, Dehradun District, Uttarakhand; Rao & Rajendran 1996: 66, pl 1, fig 12, MIOCENE, Cannanore District, Kerala; Mandaokar 2000b: 180, LATE OLIGOCENE (Tikak Parbat Formation), Jeyapore Colliery, Dilli-Jeyapore Coalfields, Dibrugarh District, Assam; Tripathi et al. 2000: 243, EARLY EOCENE (Tura Formation), Tura-Dalu Road, West Garo Hills District, Meghalaya; Trivedi & Saxena 2000: 273, pl 1, fig 8, LATE EOCENE (Kopili Formation), Umrongso-Haflong Road near Umrongso, North Cachar Hills District, Assam.

**Verrucatosporites speciosus** (Sah & Dutta) Kumar & Takahashi 1991: 602-603, pl 13, fig 4, EARLY LATE MIOCENE (Upper Bhuban Formation), Silchar-Haflong Road Section, Assam.
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(Kherapara Formation), Tura-Dalu Road Section near Kherapara, West Garo Hills District, Meghalaya (junior homonym of Polypodiosporites speciosus Sah 1967).


Verrucatosporites sp. Srivastava & Bhattacharyya 2000: 375, pl 2, fig 11, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunchal Pradesh.

VERRUCOLPORITES Sah & Kar, PROLATI.

Verrucolporites verrucus Sah & Kar. Kar 1990a: 177, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (wrongly spelt as Verrutricolporites verrucus); Rao 1990: 248, pl 3, fig 8, EOCENE-EARLY MIOCENE, Arthungal Borehole, Alleppey District, Kerala; Saxena 1991: 369, EARLY MIOCENE, Varkala and Kundra Clay mines, Kerala (wrongly spelt as Verrutricolporites verrucus); Kar & Bhattacharya 1992: 252, EARLY EOCENE, Gujra Dam Section and Akri lignite, Kutch District, Gujarat; Kar et al. 1994: 187, TERTIARY, subsurface sediments in Upper Assam; Saxena 1995: 98-99, fig 1, MIOCENE (Mayyanad Formation), Kundra Clay Mines, Quilon District, Kerala (Reworked); wrongly spelt as Verrutricolporites verrucus); Mandaokar 2000b: 183, pl 2, figs 1-3-4, LATE OLIGOCENE (Tikak Parbat Formation), Jeypore Colliery, Dilli-Jeypore Coalfields, Dibrugarh District, Assam.

Verrucosporites usmensis Sah & Kar, Kundra Clay mines, Kerala (wrongly spelt as Verrucosalsporites verrucus).


Verrucosporites sp. Kar 1990b: 233, 236, 237, EARLY-LATE OLIGOCENE (Laisong, Jenam and Renji formations), Silchar-Haflong Road Section, Assam.


Verrucosporites sp. Kumar & Takahashi 1991: 604, pl 2, fig 4, EARLY OLIGOCENE (Laisong Formation), Silchar-Haflong Road Section, Assam.

Verrucosporites sp. Singh et al. 1991: 42, pl 1, fig 8, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

Verrucosporites spp. Kumar 1994: 22, 41, pl 3, fig 1, pl 7, fig 1, pl 9, figs 2-5, EARLY-MIDDLE OLIGOCENE (Laisong and Jenam formations), Silchar-Haflong Road Section, Assam.

Verrucosporites sp. Mandal et al. 2003: 102, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

Verrudandotiaspora Kar, APICULATI.


VERRUINAPERTURITITES Pierce, TUBERINI.

Verruinaperturites raoi Ramanujam. Saxena 2000c: 163, pl 2, fig 4, MIOCENE (Sindhudurg
VERRUTRILETES van der Hammen ex Potonié, APICULATI.


VERRUTRILETES sp. Kumar & Takahashi 1991: 604, pl 18, fig 1, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.

VERRUTRILETES sp. Saxena & Rao 1996: 52, pl 1, fig 14, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.

VERRUTRIPORITES Muller, TRIPORINES.


VERRUTRIPORITES grandioratus Saxena & Misra 1990: 268, pl 1, fig 18, NEOGENE (Ratnagiri Beds), Amberiwadi Section, Sindhudurg District, Maharashtra.


VERRUTRIPORITES kundraensis Rao & Nair 1998: 53, pl 1, figs 1-2, MIOCENE, Kundra Clay Mine Section, Quilon District, Kerala.

VERRUTRIPORITES lunduensis Muller. Saxena & Rao 1996: 48, pl 2, fig 20, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.

VERRUTRIPORITES cf. lunduensis Muller. Kumar 1994: 100, pl 50, fig 8, LATE MIOCENE-
PLIOCENE (Dupitila Formation), Silchar-Haflong Road Section, Assam.


**Verrutriporites sparsiverrucatus** Kumar & Takahashi 1991: 574, pl 18, fig 11, text-fig 14, LATE LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam; Kumar 1994: 84, pl 39, fig 13, LATE MIOCENE (Bokabil Formation), Silchar-Haflong Road Section, Assam.


**Verrutriporites sp.** Rao 1990: 248, pl 3, fig 19, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Rao 1996: 157, pl 1, fig 7, EARLY MIOCENE, Turavur Borehole near Panchayat L.P. School, west of N.H. 47 between 380 and 381 km, Alleppey District, Kerala.

**VERTICIPOLLENITES** Bharadwaj, STRIATITI.

**Verticipollenites debilis** Venkatachala & Kar. Srivastava & Bhattacharyya 2000: 375, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked).

**Verticipollenites gibbosus** Bharadwaj, Srivastava & Bhattacharyya 2000: 375, pl 3, fig 10, EARLY TERTIARY, south-west of the thrust in Tippi and Pinjoli Nala on Tippi-Sessa Road, West Kameng District, Arunachal Pradesh (Reworked); Kumar et al. 2001: 247, fig 5.17, MIDDLE MIOCENE (Tipam Group), Tinali Well-7, Upper Assam (Reworked).

**Verticipollenites secretus** Bharadwaj. Kar 1990a: 181, MIOCENE (Surma and Tipam groups), Rokhia Borehole No. 1, Gojalia Borehole No. 1 and Baramura Borehole No. 2, Tripura (Reworked); Kar 1990b: 237, LATE OLIGOCENE (Reni Formation), Silchar-Haflong Road Section, Assam (Reworked).

**VESICASPORAS** Schemel, DISACCIATRILETI.

**Vesicaspora sp.** Singh et al. 1991: 42, pl 1, fig 14, EARLY MIOCENE (Surma Group), Sonapur-Badarpur Road Section, Jaintia Hills District, Meghalaya (Reworked).

**Vesicaspora sp.** Mandal et al. 2003: 102, pl 3, fig 1, EOCENE (Baratang Formation), Baratang Island, Andaman and Nicobar Islands (Reworked).

**WARKALLIPOLLENITES** Ramanujam & Rao in Thanikaimoni et al. TRIPTYCHES.


**Warkallipollenites ramanujamii** Rao & Nair 1998: 52, pl 1, fig 22, MIOCENE, Kannanellur-Kundra Road area, Quilon District, Kerala; Mandal & Vijaya 2004: 497, fig 4H, LATE OLIGOCENE-EARLY MIOCENE, Borehole PGD-1A, Raniganj Coalfield, Damodar Basin, West Bengal.

**Warkallipollenites sp.** Saxena & Rao 1996: 52, pl 2, fig 7, EARLY MIOCENE (Boldamgiri Formation), Adugiri-Purakhasia Road near Boldamgiri, West Garo Hills District, Meghalaya.

**Zonocostite type.** Kumaran et al. 1995: 1025, fig 3c, MIOCENE (Warkalli Formation), Bharathi and Kundra Clay Mines, Kerala.

**ZONOCOSTITES** Germeraad et al., PTYCHOTRIPORINES.

Formation), Silchar-Haflong Road Section, Assam.

**Zonocostites ramonae** Germeraad et al. Ramanujam et al. 1991: 54, pl 1, fig 25, EARLY MIOCENE, Pattanakad Borewell, Alleppey District, Kerala; Ramanujam et al. 1991: 3, pl 2, fig 10, NEOGENE, Mynagapalli Borewell, Quilon District, Kerala; Ramanujam et al. 1992: 22, EARLY MIOCENE (Mayyanad and Quilon formations), Kalaikode Borewell, Quilon District, Kerala; Rao et al. 1993: 82, pl 1, fig 20, EARLY MIOCENE, Thakkazhi Borewell, Alleppey District, Kerala; Banerjee & Nandi 1994: 219, EARLY-MIDDLE MIOCENE (Middle Bhuban Formation), near Kolasib, Aizawl District, Mizoram; Rao et al. 1995: 374, EARLY MIOCENE, Borewell at Kulasekharamangalam, Kottayam District, Kerala.

**Zonocostites sp.** Singh et al. 1992: 57, pl 2, fig 10, MIOCENE (Cuddalore Formation), Neyveli Lignitefield, Tamil Nadu.

**Zonocostites sp.** Hait & Banerjee 1994: 116, pl 2, fig 25, EARLY MIOCENE, near Suangpuilawn village about 20 km northeast of Aizawl, Mizoram.

**Zonocostites sp.** Kumar 1994: 42, MIDDLE Oligocene (Jenam Formation), Silchar-Haflong Road Section, Assam.

**Zonocostites sp.** Mehrotra et al. 2000: 153, PALAEOCENE EOCENE (Basal Sandstone, Sylhet and Kopili formations), Upper Assam.

**Zonocostites sp.** Pundeer & Mehrotra 2000: 141, THANETIAN-YPRESIAN (Basal Sandstone), Upper Assam Shelf.
CONCLUDING REMARKS

Usefulness and limitations of the present catalogue are highlighted below. Future plan to update the catalogue is also suggested.

Usefulness
1. The first prerequisite in palynological research is the study and identification of palynofossils and their placement under genera and species. In most of the cases, the placement of pollen or spores into genus is not a major problem for an experienced palynologist. However, to assign them to species requires consultation of literature and comparison with the known species. In case a specimen or a group of specimens having identical characters does not match with the known species, new species is proposed. For comparing with the known species, one should first know how many species of a particular genus are known and where are they published? Here, this catalogue is expected to play an important role. Knowledge of all the species will definitely check unwarranted introduction of new species. The various records of a particular species will also help to understand intraspecific morphological variations.

2. It has been observed that a number of superfluous taxa names are in frequent usage in Indian palynological literature. Such names have been clearly marked as nomen nudum or invalid combination to prevent their usage in future publications.

3. Each entry in the catalogue provides name of the stratigraphic unit from where a particular species has been recorded and also its geological age. This helps in deducing the known stratigraphic range of a particular taxon. Similarly, their geographic occurrence helps in knowing basin-wise distribution of certain taxon or a group of taxa. The catalogue is therefore expected to be useful in deducing vertical and horizontal distribution of palynotaxa.

4. Recognition of synonyms (both nomenclatural and taxonomic) and basionyms (namebringing or epithet-bringing synonym) is indispensable in palynological studies. The catalogue records synonyms and basionyms under the respective species, wherever possible. The compilation of data also brought to light a few homonyms, i.e. name of a taxon spelled exactly like a name based on a different type that was previously and validly published for a taxon of same rank. Obviously, in such cases the junior homonym needs to be given a new replacement name.

5. The catalogue also takes care of nomenclatural inconsistencies. In several cases, terminations of the specific epithets are not as per rules, this has been corrected. For example, cooksonii is changed to cooksoniae, dettmannii to dettmanniae, tsukadii to tsukadae, etc. Authorship of the species has been checked from its original valid publication and corrected accordingly, wherever required. Typographic and orthographic errors have also been corrected. These corrections will facilitate correct usage of palynotaxa in future publications.

Limitations
1. In spite of authors’ best efforts to include all records of Tertiary spores and pollen, it is possible that some of them might have escaped their attention mainly due to non-availability of literature in the library.

2. The present catalogue includes spore-pollen records only from 1989 to 2004 and therefore does not provide total number of records at one place. For getting complete records, one will have to consult earlier catalogues.

Future Plan
As the palynological data is continuously growing, it would be desirable that the catalogue be updated in every ten years. Further, the records that could not be included in the present or earlier catalogues should also be incorporated in the future editions.
REFERENCES


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A Catalogue of Tertiary Spores and Pollen from India


The research work on Indian Tertiary spores and pollen is widely scattered in various scientific journals and therefore need of a catalogue is always felt. This catalogue is a sequel of earlier catalogues published by Lakhanpal et al. (1976) and Saxena (1991) and includes all records of spores and pollen from the Indian Tertiary sediments published after 1988 up to 2004, including taxa that are nomina nuda or invalid combinations or where no binomials are given.

The present catalogue is expected to be useful in: (i) identifying Tertiary spores and pollen and their placement under suitable palynotaxa; (ii) checking unwarranted introduction of new genera and species; (iii) understanding intraspecific morphological variations; (iv) recognizing superfluous taxa names (nomina nuda or invalid combination); (v) deducing vertical and horizontal distribution of palynotaxa; and (vi) recognizing synonyms, basionyms and homonyms.