TWO NEW POLLEN GENERA FROM THE LOWER TERTIARY SEDIMENTS OF MEGHALAYA, INDIA

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ABSTRACT

Two new pollen genera, viz., Collospermumpollis and Densiverrupollenites have been established. The genus Collospermumpollis has been recovered from the Palaeocene sediments of Therria Formation, Jaintia Hills, Meghalaya and seems to have liliaceous affinity. The genus Densiverrupollenites has been described from the Upper Eocene sediments of the Kopili Formation, Jaintia Hills, Meghalaya. Its botanical affinity is uncertain.

Key-words — Palynology, Collospermumpollis, Densiverrupollenites, Lower Tertiary, India.

SARANISHA

पेयालय (भारत) के प्राचीन तृतीयक सूक्ष्म प्रवाला के सन्त अंगुर परागण वंड — सुरक्षकत मणि हिलपाठि एवं हरिपाल सिंह

इस शोध-पत वी नोम्सपरम्पराएं एवं नियमीकालिनमिट्ट नामक दो प्राचीन परागण वंड बनायें गये।

कोलोसर्पम्पोल्लस वंड मेषायलय को ज्ञातनम पवारियों के बैरिया दोल-समूह के पुरानेर वाले प्रवाला के उपलब्ध हुआ है तथा विशेष बुन्हक से सहछीखता बागाक करता है।

देनीसर्पपोल्लस वंड ज्ञातनम पवारियों के मोर्गनी दोल-समूह के उपरी वाले प्रवाला के वालत विचित्रा में हो रहे हैं।

INTRODUCTION

A DETAILED palynostratigraphical work on the Palaeocene-Eocene sediments of Meghalaya revealed the presence of two new pollen genera, viz., Collospermumpollis and Densiverrupollenites. Both these genera have been studied morphologically, illustrated and compared with the other comparable fossil pollen genera. The pollen grains of Collospermumpollis occur in the lower part of the Therria Formation (Palaeocene). This formation is exposed along the road cuttings near Jowai in the south-east of Shillong. Morphologically pollen grains of C. laevigatus are closely comparable to those of the extant form Collosspermum microspermum (Cranwell, 1953).

The genus Densiverrupollenites has been recovered from upper part of the Kopili Formation (Upper Eocene). The sediments of this formation are also exposed along the Jowai-Badarpur road between Jowai and Sonapur, Jaintia Hills, Meghalaya. It has been difficult to surmise any exact botanical affinity to the pollen grains of Densiverrupollenites.

SYSTEMATIC DESCRIPTION

Anteturma — Pollenites Potonié, 1931
Turma — Plicates (Naumova) Potonié, 1960
Infraguruma — Monoptyches (Naumova) Potonié, 1958

Genus — Collospermumpollis gen. nov.

Type species — Collospermumpollis laevigatus sp. nov.

Diagnosis — Pollen grains semicircular to semiovoidal; monocolpate, colpus widely
open, long; sexine as thick as nexine; sexine smooth, nexine indistinctly structured to punctate.

Comparison — Liliacidites Couper (1953) is distinctly different from the present genus in having reticulate ornamentation. Lilia-
pollis Krutzsch (1970) possesses crotonoid to columnellate sculpture of the exine and is non-tectate. Palmidites Couper (1953) is elliptical to oval in shape and possesses narrower colpus. Monosulcites Cookson (1947) is smaller in size, oval in shape and generally has smooth exine. Areiptites Wodehouse (1933) is elliptical to elongate-oval in shape, smaller in size and possesses a reticulate exine without having clavae or baculae in optical section. Pinjoriapollis Saxena & Singh (1981) is elliptical to lanceolate in shape, heteropolar and bigger in size.

Collospermumpollis laevigatus sp. nov.

Pl. 1, figs 7-10; Text-fig. 1

Holotype — Pl. 1, fig. 8; slide no. 6948.
Type Horizon — Therria Formation.
Type Locality — At 79.5 km from Shillong on Shillong-Badarpur Road, Meghalaya.

Diagnosis — Pollen grains semicircular to semiovoidal; monocolpate, colpus distinct, widely open, sexine as thick as nexine, sexine laevigate, nexine indistinctly structured, often appearing punctate.

Description — Pollen grains semicircular to semiovoidal in shape, some specimens exhibiting unequally broad lateral ends, size 86×79-140×110 μm (holotype 120×110 μm). Monocolpate. Colpus distinct, wide, parallel to the margin of pollen. Exine 1.5-3 μm thick, sexine and nexine almost equally thick, sexine apparently laevigate, nexine indistinctly structured, sometimes punctate.

Occurrence — Lower-Middle part of Ther-
tia Formation (Palaeocene), Meghalaya.

Affinity — Monosulcate pollen grains are mostly met within the families Amaryllidaceae, Iridaceae, Liliaceae and Palmae, where the colpus is generally not very wide. However, Collospermumpollis laevigatus gen. et sp. nov. can be compared with the pollen grains of extant plant Collospermum micro-
sporum (Liliaceae). Pollen grains of this plant measure up to 48 μm in size, and have a widely open colpus with distinctly smooth exine (Cranwell, 1953, fig. 51).

Collospermumpollis (Venkatachala & Kar, 1969) ellipticus comb. nov.

1969 Liliacidites ellipticus Venkatachala & Kar, pl. 1, fig. 13.

Holotype — Venkatachala & Kar, 1969, Pl. 1, fig. 13.

Diagnosis — As published by Venkata-
chala & Kar, 1969.

Remarks — Venkatachala and Kar (1969) reported Liliacidites ellipticus with the follow-
ing diagnosis: “Pollen grains oval-elliptical in shape, 30-43×25-28 μ. Sulcus broad and ± boat-shaped, exine finely in-
microreticulate”. Thus it is clear from the diagnosis of L. ellipticus that its sexine is smooth, whereas the nexine is micro-
reticulate. Hence it has been transferred to Collospermumpollis.

Infraforma — Prolati Erdtman, 1943

Genus — Densiverrupollenites gen. nov.

Type species — Densiverrupollenites eocenicus sp. nov.

Diagnosis — Pollen grains spheroidal to subspheroidal in polar view; tricolpate, apertures subequatorially placed, brevicolpate, ora circular to slightly lalongate; exine ornamentation verrucaceae beset with gemmae.

Comparison — Faguspollenites Raatz (1937) is spherical and tricolporate, but the
pores in it are rounded and equatorially placed. It has intragranulose to intrabaculate exine ornamentation. *Nyssapollenites* Thiergart (1937) is tricolporate but has intrapunctate exine and subtriangular shape. *Vitipites* (Wodehouse) Potonié (1960) and *Rhammacidites* (Chitaley) Potonié (1960) possess long and narrow colpi. *Hippocratesaeedites* Ramanujam (1966) is subtriangular, trizonicolporate and the sexine bears knob-like processes on both the sides of the colpus. *Trilatiporites* Ramanujam (1966) exhibits subequatorial pores but lacks colpi. *Psialatricolporites* v.d. Hammen (1956) is trizonicolporate, but in the present genus the colpi are very long and exine is psilate. *Lakiapollis* Venkatachala & Kar (1969) is tribreviscolporate and possesses lveigate to indistinct exine. *Tricolarporopsis* Dutta & Sah (1970) is also tribreviscolporate but it exhibits reticulate to foveolate exine ornamentation. *Verricolporites* Sah & Kar (1970) is tricolporate but possesses smaller size range and longer colpi. *Pelliciopollis* Sah & Kar (1970) is smaller in size, triangular to subtriangular in shape (polar view), tegulate and possesses baculate ornamentation.

*Densiverrupollenites eocenicus* sp. nov.

Pl. 1, figs 1-6; Text-fig. 2

**Holotype** — Pl. 1, fig. 3; slide no. 6958.

**Type Horizon** — Kopili Formation.

**Type Locality** — At 133 km from Shillong on Shillong-Badarpur Road, Meghalaya.

**Diagnosis** — Pollen grains spheroidal to subspheroidal; tricolporate, brevicolpate; apertures subequatorially placed; exine 1.5-2.5 μm thick, sexine as thick as nexine, verrucate to gemmate, verrucae and gemmace very closely placed.

**Description** — Pollen grains spheroidal to subspheroidal in shape. Size 75-95 μm (holotype 78 μm). Tricolporate, brevicolpate, apertures subequatorially placed. Colpi lalongate, 8-10 μm long, mostly distinct. Ora distinct, circular to slightly lalongate, margin of ora thickened. Exine 1.5-2.5 μm thick, sexine as thick as nexine, ornamented with gemmace or verrucae. Gemmace 1-2 μm high, rounded and 2-3 μm wide. Verrucae and gemmace may be present on the same specimen. The verrucae or gemmace very closely placed giving an appearance of a negative reticulum in surface view.

**Occurrence** — Upper part of Kopili Formation (Upper Eocene), Meghalaya.

**Affinity** — Uncertain.

**DISCUSSION**

Both the genera, *Collospermumpollis* and *Densiverrupollenites*, besides being distinct morphologically are of stratigraphical importance as well. The former is associated with the Paleocene sediments whereas the latter is identified with the Upper Eocene sediments. Some of the other important Paleocene marker genera like *Cupperipollis*, *Assamaletes*, *Lilacidites*, *Proxapertites*, *Paludites* and *Dandotiaspora* have also been found in the *Collospermum* assemblage. Likewise, the occurrence of Upper Eocene genera, viz., *Striatitelles*, *Lakiapollis* and *Homotrybium* in association with *Densiverrupollenites* supports its stratigraphical importance.

**REFERENCES**


**EXPLANATION OF PLATE**

(All photomicrographs are enlarged ca. × 500)

1-6. *Densiverrupollenites eoceneus* gen. et sp. nov.; slide nos. 6943, 6944, 6958 (Holotype), 6944, 6945 and 6946; coordinates: 106.8 × 9.4, 99.8 × 12.4, 80.1 × 18.10 (Holotype), 86.9 × 21.5, 111.10 × 20.0 and 79.5 × 17.9 respectively.

7-10. *Collosspermum pollis laevigatus* gen. et sp. nov.; slide nos. 6947, 6948 (Holotype), 6949 and 6948; Coordinates: 104.3 × 14.3, 100.5 × 6.2 (Holotype), 71.2 × 25.9 and 103.5 × 24.6 respectively.