
Ancorisporites venkatachala sp. nov. from the Lower Permian of Bihar, India

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The diagnosis of the genus *Ancorisporites* is emended to include megaspores without cushions on their mesosporia. The new species recorded from the Karharbari Formation is diagnosed by anchor-shaped appendages all over the exosporium and a characteristic mesosporium with numerous cushions trigonally arranged around the triradiate mark.

Key-words—Megaspore. *Ancorisporites*, Lower Permian, Karharbari Formation, Hutar Coalfield (India).

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सारांश

बिहार (भारत) के अधरि परमी कल्प से *ऐन्कोरिस्पोराइडिस* *वेंकटाचाली* नव जाति

हरिकृष्ण माहेश्वरी एवं रजनी तिवारी

बीजाणु-मध्यचोल पर अनुपस्थित तल्पों वाले गुरुबीजाणुओं को सम्मिलित करने के लिए *ऐन्कोरिस्पोराइडिस* प्रजाति का निदान संशोधित किया गया है। करहरबारी शैल-समूह से प्राप्त इस नव जाति का निदान पूरे बीजाणु बाह्यचोल पर विद्यमान लगाकार उपांगों तथा त्रिअरीय चिन्ह के चारों ओर त्रिकोणीय रूप में विन्यस्त अनेक तल्पों से युक्त लाक्षणिक बीजाणु-मध्यचोल के आधार पर किया गया है।

PANT and Mishra (1986) reported the megaspore *Ancorisporites* from Lower Gondwana of Singrauli Coalfield, Madhya Pradesh. The diagnostic features of the megaspores were circular shape, with indistinct contact areas, absence of arcuate ridges and a mesosporium that either had or did not have cushions. We consider that the presence or absence of arcuate ridges, or well-defined contact areas is controlled by preservational factor also to a large extent. According to Pant and Mishra, the

PLATE 1



Ancorisporites venkatachala sp. nov

1. A megaspore in dry condition showing a distinct triradiate mark and bacula-like protuberances which are clearly seen along the equator. × 100.
2. The holotype in dry condition. The triradiate mark and the protuberances are clearly seen. × 100.
3. The holotype after controlled maceration in nitric acid and potassium hydroxide showing inner body with numerous cushions arranged trigonally around the triradiate mark. Slide no. BSIP 9107/1754. × 100.
4. Photomicrograph of the megaspore in fig. 1 showing the triradiate mark and bifurcate-tipped appendages on the exosporium. Note the difference in dimension of the appendages at equator and in the inter-radial areas. × 150.
5. Appendages on the exosporium enlarged to show anchor-like tips. × 1500.
6. A portion of megaspore in fig. 4 enlarged to show details of triradiate mark and variation in the dimensions of appendages. × 300.
7. A portion enlarged to show bifurcated hook-like appendages. × 1500.

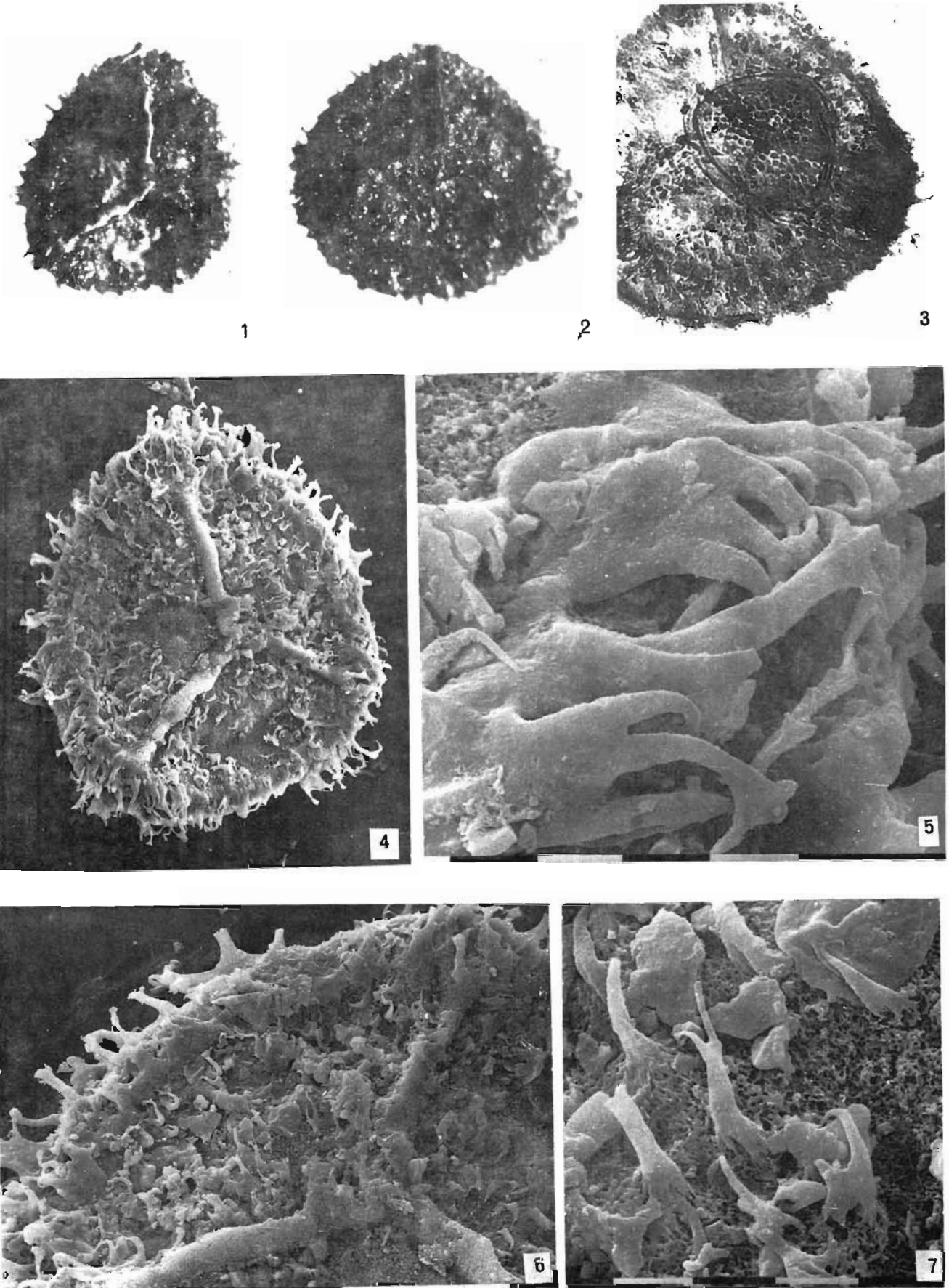


PLATE 1

mesosporium of the genus shows 'pitted' or 'unpitted' nature, i.e., it may either have cushions or may not have cushions. However, presence or absence of cushions in a mesosporium is, universally regarded as a distinct generic character, i.e., inner bodies of all the species within a genus either show cushions (which may be numerous or few and arranged biserially, haphazardly or trigonally around the triradiate mark), or do not have cushions. A genus cannot simultaneously show 'pitted' or 'unpitted' mesosporia amongst its various species. If two specimens are morphographically alike, but in one the mesosporium possesses cushions while in the other the mesosporium is devoid of cushions, then both should be placed under separate genera. Since Pant and Mishra have reported only one species, viz., *Ancorisporites binaensis*, mesosporium of which shows cushions after the dark contents have been removed from it, it is to be followed that the genus shows cushions in the inner body. Hence, the diagnosis of the genus *Ancorisporites* is emended to include only those forms which show exosporium with simple and forked appendages with pointed, tapering and recurved (hook-like) apices; and a mesosporium with cushions.

DESCRIPTION

Genus—*Ancorisporites* Pant & Mishra 1986 emend.

Type species—*Ancorisporites binaensis* Pant & Mishra 1986.

Emended diagnosis—Megaspores trilete, sub-circular to triangular in proximo-distal orientation; triradiate ridges straight to slightly sinuous, two-thirds of spore radius long, uniformly wide, may or may not reach margin, ending up at arcuate ridges; contact area well-defined; sporoderm two-layered, outer exosporium covered with bifurcated, or a mixture of simple and bifurcated, evenly distributed appendages, apices of appendages tapering, pointed and recurved; mesosporium thin, hyaline, membraneous, separate from exosporium all over except at proximal pole where attached at inter-radial areas through cushions.

Ancorisporites venkatachala sp. nov.

Pl. 1, figs 1-7

Diagnosis—Megaspores trilete, triangular in outline in proximo-distal orientation; triradiate ridges wavy, ending up at contact ridges, contact area well-defined, with distinct arcuate ridges; exosporium covered with bifurcated appendages,

apices of appendages pointed, tapering and recurved; mesosporium triangular in shape, with numerous cushions arranged trigonally around triradiate mark.

Holotype—Slide no. BSIP 9107/1754, Lower Permian, Basal Barakar (Karharbari) Formation; Hutar Coalfield, Bihar.

Dimensions :

Overall size—518.576 × 422.518 μm (dry condition), 672 × 710 μm (wet condition);

653 μm (after mounting in canada balsam)

Thickness of exine—19 μm (after mounting in canada balsam)

Length of triradiate ridges—194.230 μm (dry condition); 345 μm (wet condition); 288 μm (after mounting in canada balsam)

Width of triradiate ridges—31.38 μm (dry condition); 38 μm (wet condition); 10 μm (after mounting in canada balsam)

Width of arcuate ridges—25 μm (dry condition); 29 μm (wet condition)

Length of appendages—31 μm (dry condition); 31 μm (wet condition)

Width of appendages at base—12 μm (dry condition); 12 μm (wet condition)

Width of appendages at apex—6 μm (dry condition); 6 μm (wet condition)

Size of inner body—365 × 326 μm (wet condition); 213 × 225 μm (after mounting in canada balsam)

Size of cushions—12 × 9 μm (wet condition); 6 × 6 μm (after mounting in canada balsam)

COMPARISON

The only other known species of the genus, *A. binaensis* (Pant & Mishra, 1986, pl. 6, figs 39-43; text-figs 11A-G, 12A-C) differs from the new species in showing mixed simple and bifurcate appendages over exosporium; and dark contents in mesosporium which after being removed from the inner body showed few, irregularly distributed cushions. Appendages in the present species, as mentioned earlier, are only of bifurcated type and inner body shows numerous cushions arranged trigonally around triradiate mark.

REFERENCE

Pant, D. D. & Mishra S. N. 1986. On Lower Gondwana megaspores from India. *Palaentographica* **198B** : 13-73.