OBSERVATION ON THE POLLEN GENUS *TRABECULOSPORITES* TRIVEDI & MISRA 1970, FROM NIDPUR BEDS, SIDHI DISTRICT, MADHYA PRADESH

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Abstract

The morphological features of the pollen genus *Trabeculosporites* Trivedi & Misra 1970, from Nidpur beds, have been re-examined. Observations on more than 100 specimens under light microscope as well as S. E. M. have revealed that the taxon should encompass sub-saccate pollen having two subdued sacci and striations which exhibit taeniae type of organization. The S.E.M. study confirms the transitionary nature of striation, therefore, a new term—"Striniae" has been proposed to describe such features. Stratigraphically, *Trabeculosporites* appears to be qualifying the Lower Triassic horizon.

Introduction

The Nidpur beds, exposed in Gopad River section, are situated at about 2.5 km N-NE of Nidpur Village (81°7′E: 81°15′ N) in Sidhi District, Madhya Pradesh. These beds were discovered by Satsangi (1964) who reported *Dicroidium* suggesting a Triassic age. Subsequently, a number of palaeobotanical and palynological reports were published deciphering the richness of the flora in these sediments (Satsangi, 1964; Chandra & Satsangi, 1965; Bharadwaj & Srivastava, 1969; Trivedi & Misra, 1970; Srivastava, 1975; Pant & Basu, 1979; Tiwari & Ram-Awatar, 1990).

During the course of palynological investigations, Trivedi and Misra (1970) described a number of palynotaxa from Gopad River section near Nidpur, amongst which the genus *Trabeculosporites* is interesting for its morphology. The original diagnosis of the genus runs as "spores oval with thick margin. A borad median colpus is present extending from one end to other, it has horizontal bars. There are two vertical folds present along the margin of the colpus. Exine granulose" (Trivedi & Misra, 1970; pp. 24-25, pl. 4, figs. 49-50). The present authors have studied several sections form this locality (Tiwari & Ram-Awatar, 1990; Map-2). During the palynological investigations, a large number of specimens comparable to *Trabeculosporites* Trivedi & Misra 1970 were found. In view of the present morphographic study, it was realised that the generic diagnosis of *Trabeculosporites* is neither correct nor complete. Trivedi and Misra (1970) classified the taxon as a monocolplate pollen with "horizontal bars" while our study reveals that these pollen are subsaccate with two subdued sacci, a well defined suleus and striniate nature of grooves on the body. Hence the generic diagnosis is being emended here. Unfortunately the type slides as well as the type material could not be made available to us for examination. However, the material studied here belongs to precisely the same bed, hence Neotype of the genus *Trabeculosporites* is designated here.

Observations

Genus-*TRABECULOSPORITES* Trivedi Trivedi & Misra, 1970 emended.

Type species—*Trabeculosporites gopadensis* & Misra, 1970 emended here.

Holotype—In Trivedi & Misra, 1970, pp. 25, pl.4, fig. 49, not traceable.

Neotype—Pl. 1, fig. 1

Emended generic diagnosis—Disaccate pollen with haploxylonoid construction, oval to subcircular in shape; central body ill-

defined, only marked by the end of striniae (striations-taeniae), proximally bearing 6-10 striations with generally irregular width of grooves appearing at time to be taeniae; exine intramicro-reticulate. Sacci sub-hemispherical; proximally attached equitorially, distally subequitorially leaving a well-defined saccus free-area. Sacci generally sickle-shaped, sub-saccate in nature being not fully developed, intramicroreticulate with thick muri, protosaccate.

Description - Pollen 68-130 μm, mostly haploxylonoid, oval to subcircular in shape, central body outline faint, only marked by the end of striniae, without any vertical connections. Each band between the grooves 6-10 μm wide and 30-32 μm in length, with intramicroreticulate stucture. In some cases typical striations also observed (Pl.1, fig. 6). Subsacci haploxylonoid, distally a straight-sided to biconvex, 70-80 μm wide saccus-free-area appearing as sulcus.

About one hundred specimens assignable to *Trabeculosporites* have been studied. This is a typical case of the pollen population where striations appear to form a taeniate pattern (Pl 1, fig. 9), thus a transitionary stage of morphology is suggested The width of the grooves are irregular and the inter-striation exine becomes flabby. In most of the cases, the taeniae bands are distinct (Pl. 2, figs. 2, 7). In order to classify this type of transitionary character a new term *Striniae* is being proposed, which defines the striations appearing to give a taeniae impression.

Comparison—Crustaesporites Leschik (1956) emend. Jansonius 1962 bears taeniae on the proximal face of the body, but differ form the presently described forms in being monosaccate with multisaccate tendency. *Lunatisporites* Leschik (1955) emend. Scheuring (1970) possesses a distinct central body, clearly defined taeniae and lunar shaped folds at the junction of saccus attachment. Therefore, it could not be compared with this genus. *Fusacolpites* Bose & kar (1966) is a non-saccate, monocolpate grain with horizontal grooves. *Decussatisporites* Leschik (1955) emend Jansonius (1962) is a monocolpate grain having horizontal as well as vertical striations. *Striasulcites* Venkatachala & kar (1968) is also a non-saccate pollen. *Distriamonocolpites* Bharadwaj & Sinha (1969), a non-saccate pollen with biconvex colpus and intramicropunctate exine structure on both the surface of the body, does not compare with the present genus. *Bharadwajipollis* Kar (1969) closely resembles the present genus in shape and size but it is a monosaccate grain with enveloping saccus.

Trivedi and Misra (1970) have compared this genus with *Ginkgocyadophytus* and *Cycadopites*; both these forms being non-saccate, have no similarity with *Trabeculosporites*. *Kamthisaccites* described by Srivastava and Jha (1986) possesses taeniae on proximal surface but is monosaccate pollen with girdling saccus.

Trabeculosporites gopadensis Trivedi & Misra 1970, emended.

Pl.1, fig, 1-10; Pl. 2, figs. 1-9.

Holotype— Pl. 4, fig. 49. Trivedi & Misra 1970, pp. 25, slide not traceable.

Neotype— Pl. 1, fig. 1

Type locality– Gopad River section, 2.5 km N-NE of Nidpur Village, Sidhi Dist., Madhya Pradesh, India.

Age—Early Triassic

Diagnosis– Disaccate, haploxylonoid oval in shape, 45×48 μm. Central body ill-defined, proximally bearing 6-8 striniae, with intramicroreticulate exine. Sacci hemispherical, proximally attached equatorially, distally subse-quatorial, leaving a ± uniform saccus-free-area. Sacci not fully blown but attached all along the equator to the corpus. Exine of the sacci intramicroreticulate.

Description—Pollen grains disaccate, haploxylonoid, oval to subcircular, rarely monosaccoidal, 60-130 μm; central dody not well-defined, only marked by the end of striniae, proximally bearing 6-10 horizontal grooves, the spaces between two grooves not uniform (Pl 1, fig. 3; text-fig. 1). Therefore, the term striniate has been used for these big, strip-like bands which are not true striations (Pl 1, figs 5,3,9; Pl 2, figs. 2, 7). Sexine of the body generally microinfrapunctate to microinfra-reticulate (Pl. 2, fig. 7; Pl. 1, fig.1). Sacci of the grains not fully developed (subsaccate conditions), running all along the corpus equator and laterally close to each other, distally inclined in various degrees, inframicroreticulate (Pl. 2, figs. 1,4,7).

Remarks—The genus *Trabeculosporites*, as the available data suggest, starts appearing in latest Permian and dominates in Early to Middle Triassic.

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Explanation of plates

Plate 1

(All photomicrographs, unless otherwise stated, are ca × 500).

1-10 *Trabeculosporites gopadensis*; 1. Neotype ; showing the prominent sulcus, with strip-like taeniae (striniae) with microreticulate structure ; BSIP side no. 10573, Coordinate : 27 × 100 (Microscope no. Leitz 512794). 2. A broken specimen showing the micro-reticulate structure ; BSIP side no. 10578, Coordinate : 17 × 98.

3. An enlarged portion of the specimen (in fig. 6) showing the character of striniae, BSIP. side no. 10577, Coordinate : 18 × 106, × 1000; with a prominent sulcus and infra-reticulate structure on exine.

4. Specimen with reduced sacci and inframicroreticulate structure on exine; BSIP. side no. 10248; Coordinate : 15 × 108.

5,9. Specimens, showing characters of striniae with reduced sacci (in fig. 5), BSIP side no. 10572, 1073; Coordinates : 38× 103; 31 × 101.

7,8. A reduced sacci with prominent character of sulcus; showing the infra-reticulate structure on exine, BSIP side nos. 10574, 10578; Coordinates: 32.5 × 100; 11 × 94.

10. A monosaccoid grain with infra-recticulate structure on grooves (striniae), BSIP side no. 10576; Coordinate :25 × 105.

Plate 2

1-9. Scanning Electron Micrographs of specimen of *Trabeculosporites gopadensis*.

1. Specimen showing the striniate nature of the grooves with reduced sacci (bar—10 μm)

2. An enlarged view of the striniae ; uneven space in grooves (bar—10μm).

3. Specimen showing distinct disaccate nature; with reduced sacci (bar—10μm).

4. A broken specimen showing the groove-like pattern (bar—10 μm).

5. A badly preserved grain with reduced sacci and distinct character of striniae. Same scale as in Fig.1.

6. A distal view of the grain. Same scale as in Fig 1.

7. An enlarged portion of the specimen in Fig.5, showing the character of striniae and small saccus (right side) with infrapunctate structure (bar—10μm).

8. A folded specimen showing the striniate character and small saccus; same scale as in Fig. 2.

9. A broken specimen showing the charactre of striniae (left side) and a small saccus (right side). Same scale as in fig. 1.


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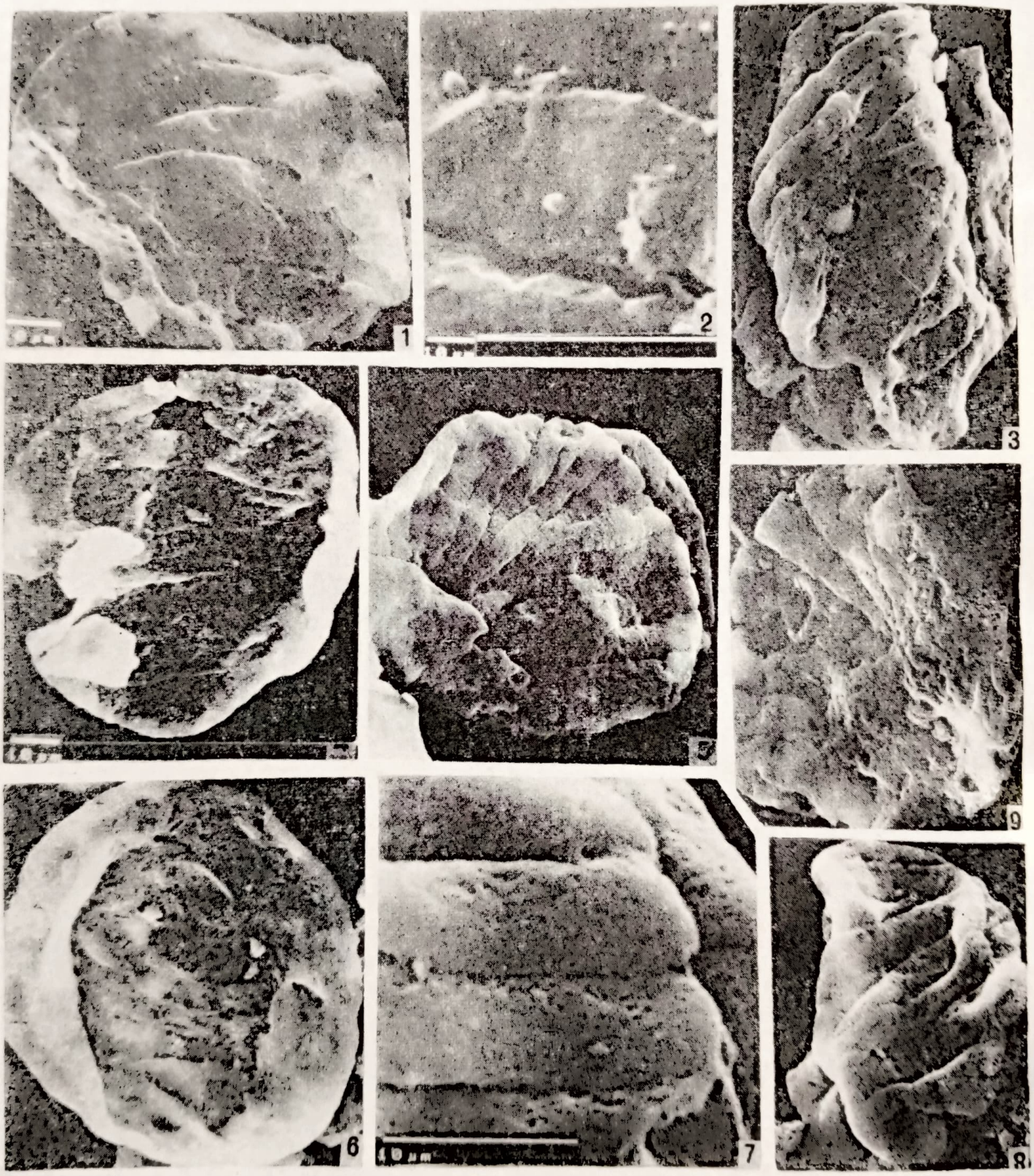
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