

Palynofossils from the Chhasra Formation (Early Miocene), Kutch Basin, Gujarat, India

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ABSTRACT

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A palynoassemblage of Early Miocene age has been recovered from the Chhasra Formation of Kutch basin. Palaeoecology and environment of deposition are inferred from the recorded palynoflora.

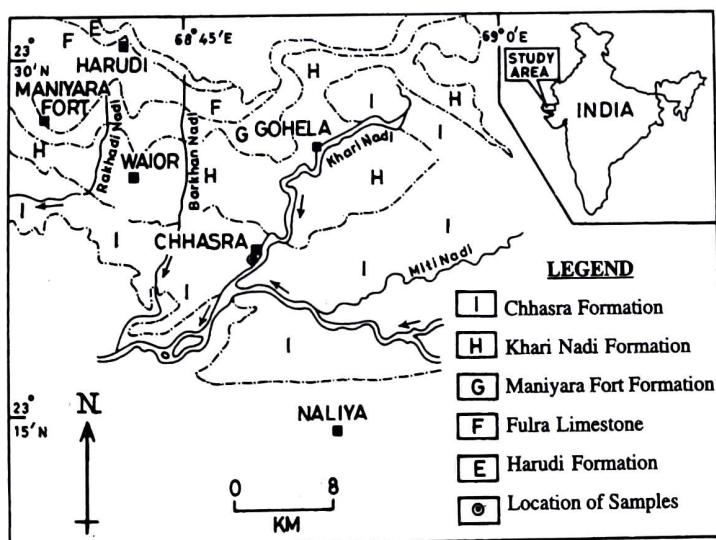
Key-words: Palynology, Chhasra Formation, Early Miocene, Kutch Basin, Gujarat, India.

A good amount of palynological data has been published from the Tertiary sediments of Kutch, Gujarat (Kar 1985). However, these data are mostly confined to the Palaeogene whereas the same from the Neogene are scarce (Mathur & Mathur 1969, Kar 1985).

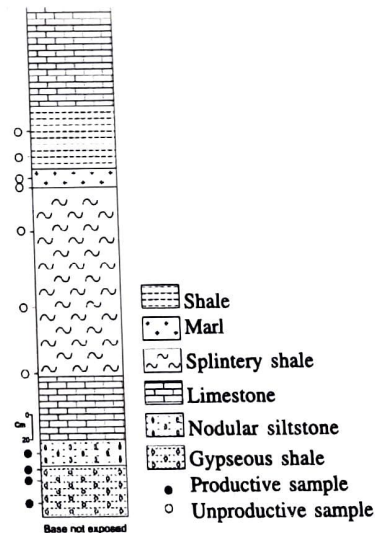
The present communication reports a poor palynoassemblage from the Chhasra Formation. Eleven samples were collected from a section exposed along Khari Nadi, about 3 km south of Chhasra village (Lat. 23°2'N: Long. 68°46'E). Of these, four samples from basal part of the section yielded palynofossils (Text-

figure 1). The slides of the productive samples are deposited at the museum of the Birbal Sahni Institute of Palaeobotany, Lucknow.

The assemblage is poor in both quality and quantity and consists of *Hammenisporis susannae* (van der Hammen) Saxena & Trivedi, *Biretisporites convexus* Sah & Kar, *Warkallipollenites erdtmanii* Rao & Ramanujam in Thanikaimoni et al., *Palaeomalvaceaepollis paucispinosus* Kar, *Malvacearumpollis bakonyensis* Nagy, *Cruciferoipollenites* sp., *Abiespollenites cognatus*



A



B

Text-figure 1. A. Geological map of the area showing fossil locality. B. Lithological succession exposed along Khari Nadi near Chhasra from where samples were collected.

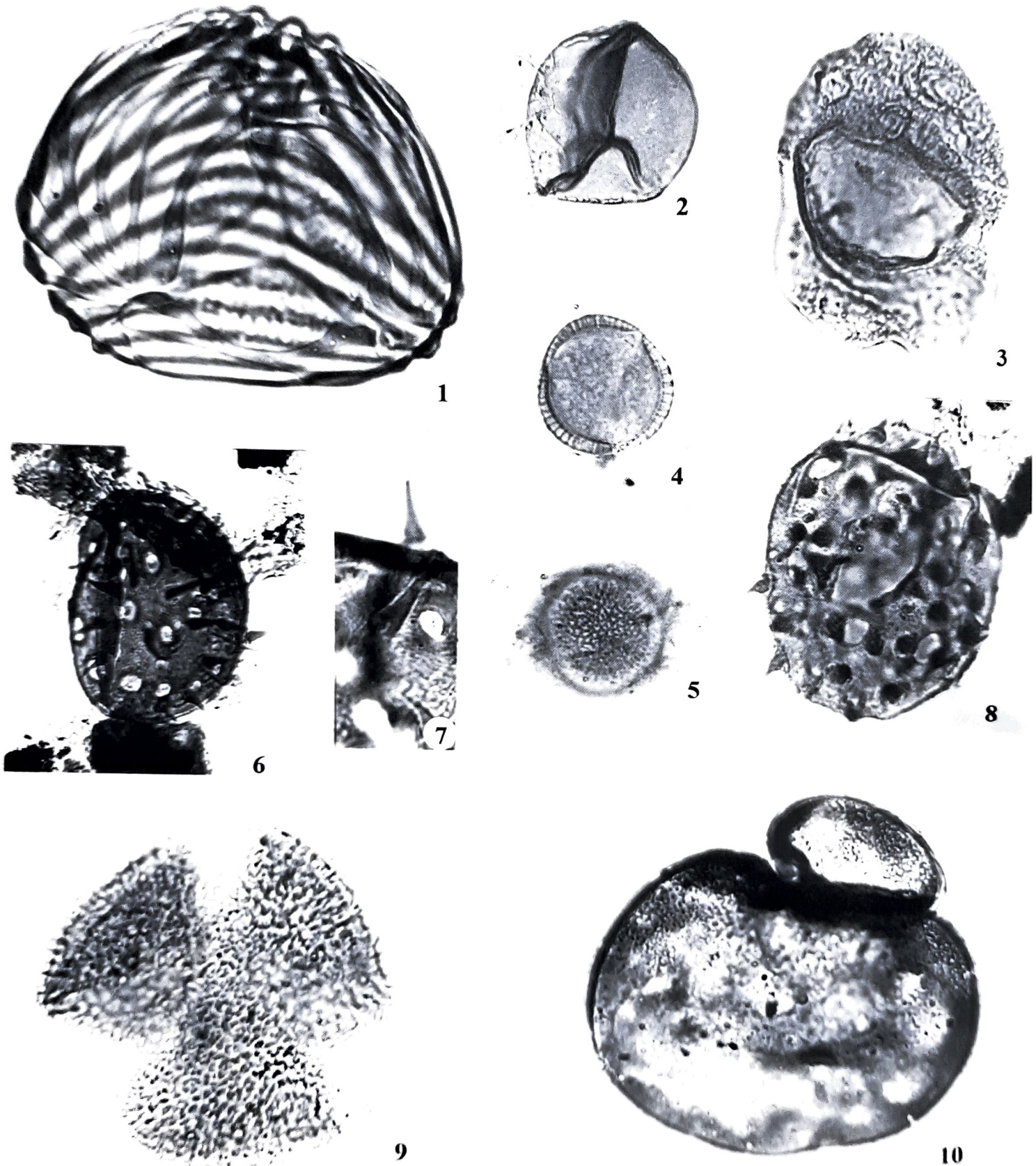


Plate 1

1. *Hammenisporis susannae*, BSIP slide no. 13408(N 29), x1000. 2. *Biretisporites convexus*, BSIP slide no. 13409(K10/1), x700. 3. *Abiespollenites cognatus*, BSIP slide no. 13408(X 40), x1000. 4, 5. *Cruciferoipollenites* sp., BSIP slide no. 13407(Q 39), x1000. 6, 7. *Palaeomalvaceaeipollis paucispinosus*, BSIP slide no. 13409 (R 21); 6. x700, 7. x1500. 8. *Malvacearumpollis bakonyensis*, BSIP slide no. 13408 (F 11), x1000. 9. *Warkallipollenites erdtmanii*, BSIP slide no. 13410 (R 45), x1000. 10. Algal body, BSIP slide no. 13411 (G 33) x1000.

Kar, and a few algal bodies. The algal bodies are restricted to the nodular siltstone strata. *Hammenisporis* is the dominant taxon followed by *Palaeomalvaceaepollis paucispinosus* and *Malvacearumpollis bakonyensis*. Other taxa are represented by one or two specimens only (Plate 1).

Fossil taxa are assignable to the following families: Parkeriaceae (*Hammenisporis*), Malvaceae (*Palaeomalvaceaepollis*, *Malvacearumpollis*), Plumbaginaceae (*Warkallipollenites*), Brassicaceae (*Cruciferoipollenites*) and Pinaceae (*Abiespollenites*). The habitat of the comparable extant taxa/ families indicates source of palynotaxa from different ecological niches. *Abiespollenites*, related to extant *Abies*, represents montane element and appears to have flown from the Himalayan region in the north. *Hammenisporis* (*Ceratopteris*) indicates swampy/ marshy condition. Algal forms also support this contention. Lowland vegetation is represented by members of Malvaceae and Brassicaceae. The presence of *Warkallipollenites*, affiliated to *Aegialitis*, suggests occurrence of mangrove vegetation. Palynotaxa representing different plant communities in the assemblage suggest that they were carried from inland by water channels to the depositional site. The palynological data indicate

prevalence of tropical conditions during the Early Miocene in the area due to presence of mangrove element *Warkallipollenites* and tropically distributed taxon *Hammenisporis*.

The Chhasra Formation has been dated as Early Miocene (Burdigalian) based on Miogypsinidae assemblage (Biswas 1992). Additionally, *Hammenisporis*, *Warkallipollenites*, *Palaeomalvaceaepollis*, *Malvacearumpollis* and *Abiespollenites* also support the Early Miocene age. These taxa are common between the present assemblage and the Early Miocene palynoassemblages recorded from the Khari Nadi Formation, Kutch Basin (Kar 1985) and subsurface sediments from West Bengal (Mandal & Vijaya 2004).

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