Palynological assemblage from the Anjar intertrappeans, Kutch district, Gujarat: Age implications

In the recent past, the Anjar intertrappean beds have been considered important Deccan-volcano-sediments to document Cretaceous–Tertiary boundary events. After the discovery of Ir anomalies in this intertrappean section, a greater thrust was laid on documenting palynological evidences in support of Cretaceous–Tertiary boundary events. In view of this, extensive surveys were undertaken to explore palynological data from the Anjar intertrappeans of Kutch district, Gujarat. This is a record of the palynological assemblage from this intertrappean section.

The pollen- and spore-yielding Anjar intertrappean beds are exposed near Viri village about 3.5 km south of Anjar town, Kutch district. These intertrappeans lie between III and IV basalt flows in the study area and are lithologically made up of carbonaceous shales, marl, limestones and a thin bed of gypsum. The limestones are mostly cherty in nature (Figure 1).

The Deccan traps cover substantial areas in Madhya Pradesh, Maharashtra, Karntaka, Gujarat, Andhra Pradesh and parts of Uttar Pradesh and Rajasthan. Palaeobiological investigations of the intertrappeans in the above areas have been extensively carried out by a number of workers. The palynological microflora has already been recorded from infra- and intertrappean beds of Jabalpur region, Madhya Pradesh, and Lalitpur, Uttar Pradesh. However, many animal fossils, and anomalously high concentration of iridium, have been documented from the Anjar intertrappeans. The palynological assemblage recovered in the present study, though quantitatively poor, is a detailed documentation of palynoflora from the Anjar intertrappeans. The present palynoflora assemblage is made up of Gabonisporis bacaricatum, G. vigourouxii, Gabonisporis sp., Proxapertites granulatus, Proxapertites sp., Palmidites sp., Racemnoncopites maximus, Trioresites sp., Proteacidae ticas and Proteacidae sp. cf. P. miniporatus, Aquilapollenites indicus and some Early Cretaceous reworked palynomorphs, viz. Crybelosporites stratus, Aquitriaradites ornatus and fungal spores. Besides the above palynobiota, a rich assemblage of freshwater fauna comprising gastropods and ostracods has also been recovered during the present investigation.

Figure 1. Geological map of Anjar area and lithostratigraphic section at the collecting locality (map after Ghevariya).
The characteristic palynofossils recorded during the present study from the Anjar intertrappean are shown in Figure 2. The age diagnostic palynotaxa of the present assemblage such as *G. bacaricum*, is considered to have disappeared in Maastrichtian time in India. *Proxapertites* and *Racemonocolpites*, on the other hand, though dominant taxa in Paleocene–Eocene times, do extend to Maastrichtian as well. *Aquilapollenites* also starts appearing from Turonian and extends up to Tertiary. Pollen grains of *Proxapertites* range from Late Cretaceous to Tertiary. Hence there is no index palynotaxon of Paleocene time interval in the present assemblage, thereby restricting the age of Anjar intertrappean beds to the Maastrichtian time interval.


ACKNOWLEDGEMENTS. N. N. D. is grateful to the Department of Science and Technology, New Delhi for financial assistance. We are also thankful to Mr Yogesh Kumar, Department of Earth Sciences, Kurukshetra University for help during sample collection.

Received 15 December 2003; revised accepted 15 March 2004

N. N. DOGRA1,*
Y. RAGHUMAN SINGH2
R. Y. SINGH2

1Department of Earth Sciences, Kurukshetra University, Kurukshetra 136 119, India
2P.G. Department of Geology, University of Jammu, Jammu Tawi 180 006, India
3Centre of Advanced Study in Geology, Panjab University, Chandigarh 160 014, India
*For correspondence.