Reply:

We appreciate the interest of Kochhar on our work reported in ref (1). He has worked quite extensively in the region and his concern is understandable. The main reason for his comments arises because some more results were obtained from the region subsequent to that presented in the Annual Report 1998–99 of NGRI[2]. Our earlier palaeomagnetic results on the granite and dolerite bodies in the region reveal that the magmatic activity is of late Palaeozoic to late Cretaceous periods. Subsequently we have extended these studies on an aplite dyke also in the region. This aplite dyke revealed remanent magnetic directions similar to that of Malani rhyolites that were well constrained with palaeomagnetic and geochronological results[3–7]. Therefore, in the light of this new result, we have revised the period of magmatism in the region to Neo-Proterozoic to Palaeocene (750–50 Ma). Bhushan and Khullar[8] proposed the stratigraphy of the dyke swarms in the region to be of Neo-Proterozoic to Palaeocene on the basis of geological, aerial photo and field relationships. Therefore, there is a very good agreement of palaeomagnetic and radiometric data of aplite dyke and Malani rhyolites which extend the magmatic activity in the region to Neo-Proterozoic era.

The other comment by Kochhar is that the proposal of tectonic trio formed by the Indian subcontinent, Madagascar and Seychelles Islands is far fetched. In the Rodinia supercontinent proposed by Weil *et al.*[9], the Indian subcontinent, Madagascar and Seychelles Islands were found to locate towards the NW corner of the reconstruction. It is proposed by Torsvik *et al.*[10] that India, Madagascar and Seychelles Island formed an outboard continental terrane of the Rodinia supercontinent during the Neoproterozoic (ca. 750 Ma). Subsequent palaeomagnetic and geochronological studies on the Malani Igneous Suite from Rajasthan and granitoids from Seychelles Islands support their locations in the reconstructed Rodinia supercontinent. Our palaeomagnetic results of the aplite dyke from the Sankra dyke swarm are similar to the palaeomagnetic results of Malani rhyolites and therefore, we are inclined to agree with the proposal of a tectonic trio of these continents.

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Rajasaurus narmadaensis

This has reference to the News item that appeared in *Current Science*[1], wherein it is stated that *Rajasaurus* was perhaps a 'truly Indian dinosaur' whose morphological characters might have evolved indigenously. This is nowhere stated in the paper under reference[2]. On the contrary, while discussing the phylogenetic affinity of the Indian species, the authors point out its close affinity to *Majungatholus* from Madagascar and *Carnotaurus* from South America[2].

Secondly, the palaeogeographic picture for the Late Cretaceous[1] is one of the popular hypothesis and not the one propagated in the research paper[2]. It has been suggested[2] that area cladogram implied by the phylogenetic relationships of the Gondwana dinosaurs (Figure 1) offers credence to an altogether different hypothesis that Africa broke away from other Gondwanan land mass before land connection was severed between India, Madagascar and South America[3,4]. Under this hypothesis, connection between Africa and South America was cut-off in Early Cretaceous that fully isolated Africa (Figure 2 *a* and *b*) while connections were maintained between India and Madagascar with South America through Antarctica via Kerguelen Plateau till the end of Cretaceous (Figure 2 *c*).

The above palaeogeographic implications of abelisaurid dinosaur may not find support from the most popular palaeogeographic reconstructions that depict India as an island drifting independent of other Gondwanan land masses in the Late Cretaceous. But if the phylogenetic affinity of the new species and other abelisaurid dinosaurs from India with similar dinosaurs from other Gondwana continents is to be believed, the palaeogeographic picture was drastically different during greater part of the Cretaceous.

The revised reconstruction suggested by Cretaceous dinosaurs predicts a greater similarity of the Late Cretaceous terrestrial biota between South America and Indo-Madagascar (via Antarctica) than between South America and Africa.

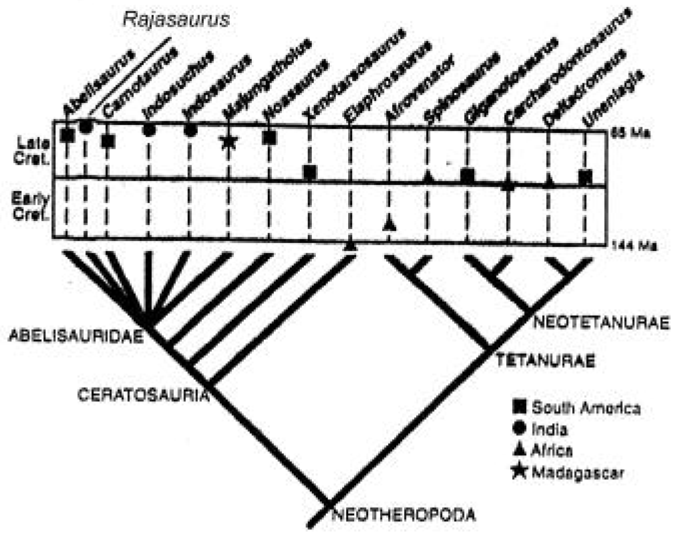

Figure 1. Summary of phylogenetic, temporal and biogeographic relationship of nonavian theropod genera from the Cretaceous of Gondwana. Taxa include most named genera recovered from Cretaceous deposits on Gondwanan land masses (after Sampson *et al.*[3]). The new genus *Rajasaurus*[2] has been added in the cladogram.

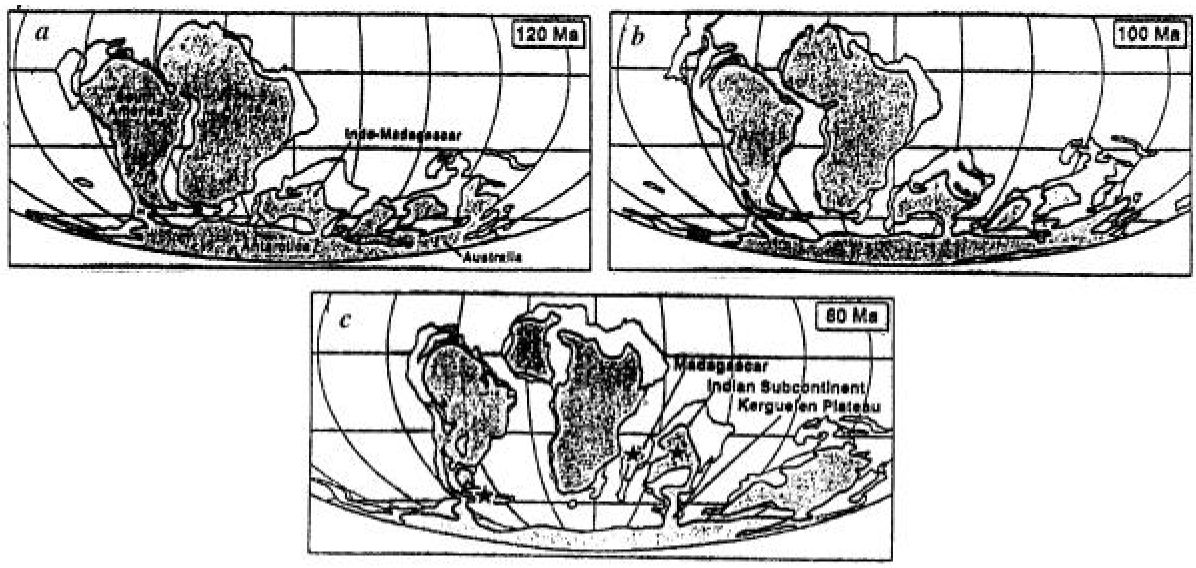

Figure 2. Revised palaeogeographic reconstruction of Gondwanaland during the Cretaceous. ***a***, During the Early Cretaceous (circa 120 Ma), plate tectonic activity severed subaerial connections between Africa and South America, fully isolating Africa, while connections were maintained among other Gondwanan land masses. ***b***, At the close of the Early Cretaceous, subaerial links were retained among Gondwanan land masses exclusive of Africa. ***c***, These continental links persisted until sometime in the middle to Late Cretaceous (perhaps as late as 80 Ma). Madagascar and the Indian subcontinent were attached to Antarctica via an isthmus comprising several terrains, including the Kerguelen Plateau. Stars indicate confirmed records of abelisaurid theropods (after Sampson *et al.*[3]).

Also, from the time of its physical isolation from South America, Africa should exhibit increasing endemism and not India, as suggested by Bhatt[1].

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