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Evolution of plant terpenoids on a 'biotic ferry'

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Palaeogeographic model suggests that the Indian plate was separated from Gondwana during Late Jurassic and started moving towards the northern hemisphere during the Early Cretaceous and remained as an island continent during the entire Cretaceous until it collided with Asia in Early Eocene at ca. 50 Ma. It is believed that many vertebrate groups may have originated in India or other Gondwanan land masses and were carried on the rafting Indian plate and finally dispersed 'out of India' following the collision between India and Asia. However, the evolution of plants on the rafting continent is poorly documented.

A brief outline on evolution of plant terpenoids from Permian to Eocene on the Indian continent will be discussed during the presentation. The Permian coals are characterized by tricyclic and tetracyclic diterpenoids. The possible source of these compounds is extinct seed ferns.

The molecular composition of Jurassic and early Cretaceous coals and sediments suggests that the vegetation was contributed by conifers (e.g. Arucariaceae, Podocarpaceae) during the period. Aromatic triterpenoids derived from angiosperms are detected in the sediments of Late Maastrichtian age. Drastic reduction of coniferous vegetation and proliferation of angiosperms in early Palaeogene are observed in the present study. The terpenoid signatures of early Palaeogene lignites suggest that the western India was covered by widespread thick closed rain forests dominated by family Dipterocarpaceae thriving under the influence of tropical climate.