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Terpenoid composition of fossil resins from western India: New insight into the occurrence of resin-producing trees in Early Paleogene equatorial rainforest of Asia

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Abstract

The terpenoid composition of well-preserved fresh and oxidized fossil resins (ambers) from Early Paleogene lignite-bearing sequences of India have been examined using gas chromatography- mass spectrometry for determining their botanical origin. The samples were collected from two sedimentary basins viz. Barmer (Akli Formation) and Bikaner-Nagaur (Palana Formation), western India. The total extracts of the studied ambers are represented by hydronaphthalenes; sesquiterpenoids and significant occurrence of diterpenoids. Such terpenoid distribution is typical for gymnosperm, especially conifer derived source. The diterpenoids are comprised of majorly abietane, phyllocladane, kaurane, pimarane/isopimarane and podocarpane class compounds. Tetracyclic diterpenoids such as 18-norkauranes, *ent*-16 β (H)-kaurane and 16 α (H)-phyllocladane and a rearranged tricyclic diterpenoid, rosane are detected in the fossil resins from Barmer Basin. The occurrence of tetracyclic diterpenoids and rosane together with 8,13-dimethyl-16-norpodocarpa-6-ene suggests that Podocarpaceae family as possible source of the ambers. However chemotaxonomic assignment at family level for the fossil resin from Bikaner-Nagaur Basin is difficult due to the absence of source specific diterpenoids. Previous reports had documented the occurrence of angiosperm-derived dammar resins from Early

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