Title:	Molecular Approach to determine paleodipostion and paleoenvironment Lignite Deposites in northan India.
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Abstract:	This study examines the Oligocene epoch's tertiary coal deposits. The epoch is marked by significant geological and biological changes, including the diversification and dominance of mammals, the spread of flowering plants, and vegetational patterns similar to modern ecosystems. A gradual global cooling trend followed the Oligocene epoch, resulting in cooler climates and the expansion of polar ice caps. T his cooling had a broad impact on both terrestrial and marine environments, influencing species evolution and distribution, which led to the formation of lignite deposits in the Indian subcontinent during the Oligocene epoch. For the current studies, samples were collected from the Tikak Parbat Formation of the Barail group of the Oligocene epoch at Makum Coalfield, Assam. For a better understanding of the Paleovegetation, samples were analysed for biomarkers. By examining biomarkers in these coal deposits, we can gain insight into the Paleoenvironment, Paleodepositional conditions, and organic sources. The Analysis revealed compounds such as n-alkanes, pristane, phytane, and triterpenoids, with n-alkanes ranging from C 27 to C 35 (Long-Chain n-alkanes). The n-alkanes are dominated by odd carbon chain length from n-C 27 to n-C 35 (long chain n-alkanes) which is typically derived from higher plants. Several n-alkane indices were calculated, including TAR (Terrestrial to Aquatic ratio), ACL (Average Chain Length), CPI (Carbon Preference Index), and P aq values. The TAR values range from about 1.61 to 5.71, ACL values range between 27.42 and 29.34, CPI values range from about 1.22 to 1.67, and Paq values range from 0.38 to 0.88. The data suggest that during the deposition of sediments that formed the coal, there was a notable abundance of large terrestrial plants in the geological environment and well-preserved Organic matter, predominantly from higher plants such as trees, shrubs, and grasses in the terrestrial ecosystem.
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