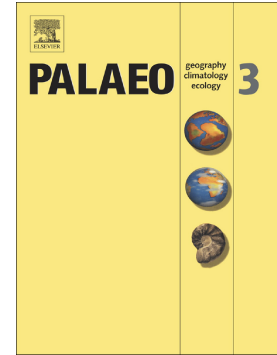


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Carbon isotopic composition of branched tetraether membrane lipids in a loess-paleosol sequence and its geochemical significance

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ABSTRACT

Carbon isotopes of organic matter have been widely used in quantitative reconstruction of paleovegetation and paleoclimate since they are sensitive to vegetation and environmental changes. However, the effect of transformation of soil organic matter after burial remains unclear. The carbon isotopes of brGDGTs, which were likely produced by heterotrophic bacteria in soil or peat, provide an opportunity to fill this gap. In this study, we investigated the stable carbon isotopic composition of brGDGT-derived alkane spanning the last 60 kyr in the Lantian loess-paleosol sequence from the southern Chinese Loess Plateau, as well as its relationship with $\delta^{13}\text{C}$ values of total organic carbon (TOC) and other established climatic proxies. The results show that the $\delta^{13}\text{C}$ values of brGDGTs were slightly depleted (ca. 1-2 ‰) relative to TOC, and a good linear relationship between them was observed. These

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