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Characteristics of Carbon and Oxygen Isotopes in Carbonate in Lucaogou Formation and Its Significance on Palaeolake in Jimsar Sag

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Lucaogou formation is important lacustrine tight oil bearing area in Jimsar sag in Junggar basin. To get more understanding on environmental characteristics of the palaeolake, examinations were carried out by means of phosphoric acid method on carbonate in Lucaogou formation in Jimsar sag. Results indicated that δ^{13}CPDB of carbonate ranged in 6.8‰-9.7‰ with average value of 8.3‰, and δ^{18}OPDB ranged in -11.9‰--4.3‰ with average value of -6.2‰. The value of δ^{13}CPDB positively correlated with that of δ^{18}OPDB and this attested confined saline lake environment with intensive evaporation. Massive nourishment come up together with magmatic activities, organisms flourished, and weight of δ^{13}CPDB exhibited heavier than usual as a result. Precipitation which is rich in light oxygen isotope produced cyclic variation in δ^{18}OPDB. During sedimentation of Lucaogou formation, the palaeolake is featured by high salinity with frequent variation. Influenced by cyclic precipitation and intensive evaporation, water level of palaeolake varied in process of high-low-high, or high-low, and salinity also varied high-low-high, or high-low.

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