RELATIONSHIP BETWEEN NITROGEN ISOTOPE AND SEDIMENTARY REDOX CONDITIONS OF THE UPPER TRIASSIC OF ORDOS BASIN, CENTRAL CHINA

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Nitrogen isotope analyses of source rocks began in earnest in the 1980's.This field developed slowly for the subsequent 30 years mostly due to the technical difficulty of making measurements in N-poor samples(Ader et al., 2016). Nitrogen isotopes are often measured in bulk sediment from cores to evaluate nitrogen cycle reactions and sedimental water column redox (Ganeshram et al., 1995; Ganeshram et al., 2002; Ganeshram et al., 2000; Quan et al., 2013; Quan et al., 2008).

In this study, we measured the stable nitrogen isotope of shale sample from the Upper Triassic Yanchang Formation, Ordos Basin, central China to evaluate the characteristic of depositional environment. Yanchang Formation Chang7 member is the thick black mudstones and rich organic matter source rocks. Also Chang7 member is the largest flooding period in this large lacustrine basin(Li et al., 2016).

We measured $\delta^{15}N_{bulk}$, organic carbon isotopes ($\delta^{13}C_{org}$) and total organic carbon (TOC) from a core of Yan56 well from Erdos Basin that contains Chang7 Member. Chang7 member are divided into three sub-members,from $Chang7_1$ at the top to $Chang7_3$ at the bottom. $\delta^{15}N_{bulk}$ are higher in the $Chang7_3$(average $\delta^{15}N_{bulk}$=4.2 ±1.5‰) than in the $Chang7_1$ and the Chang 7_2(average $\delta^{15}N_{bulk}$=3.6±0.6‰, average $\delta^{15}N_{bulk}$=2.9 ±1.3‰ respectively). However, there is no significant difference in TOC and $\delta^{13}C_{org}$ of Chang7 member,indicating the organic source are same.

Trace element idcators and biomakers indicated Chang7 member deposited in the dyoxic and fresh lascustrine environment. The Vr/Cr,U/Th,V/(V+Ni),Sr/Ba trace element idcators and Pr/Ph,GI index implied the salinity and reductibility of $Chang7_3$ is higher than that of $Chang7_1$ and $Chang7_2$ member. There is a good corresponding relation between $\delta^{15}N_{bulk}$ and redox index. And we suggest that $\delta^{15}N$ can inform the sedimental water colum redox condition.

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