

THE SOURCE ROCKS OF ORDOVICIAN OILS IN HUANGHUA DEPRESSION, NORTHERN CHINA

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Oil exploration in Paleozoic strata in Northern China has been performed for many years, but only two Ordovician crude oils, e.g. Konggu 3 and Konggu 7, were found in Huanghua Depression. The lack of high quality of oil source rocks in this region appears as a critical obstacle to find more Paleozoic oil resources. The present study found *G. prisca* present in middle Ordovician in Huanghua Depression and the oils are well correlated with the organic matter of *G. prisca* containing rocks. The results provide the clues to find organic rich source rocks in Northern China.

G. prisca is present as the disseminated and stromatolitic form in the Middle Ordovician limestone from well Konggu 4 in the Huanghua Depression. It is abundant and emits fluorescent light under microscopy. The extract of *G. prisca* containing rock is characterized by *G. prisca* types of compounds, e.g., *n*-C₁₇ dominance and odd to even preference in *n*-alkanes, and low concentration of isoprenoids in saturated fraction. Furthermore, abundant phenolic compounds are detected in the pyrolysate of kerogen (Fig.1), which was biosynthesized and generally fixed in the "closed cell wall" of *G. prisca*.

The biological markers and stable carbon isotopic ratios of *n*-alkanes in the saturate fractions of the rock extracts are identical to those in the saturate fractions of crude oils from well Konggu 7 and Konggu 3, which reveals that hydrocarbons in the reservoirs in Huanghua Depression derived from *G. prisca* containing source rocks. The observation of abundant *G. prisca* in rocks indicates that a giant hydrocarbon generation potential may exist in this region.

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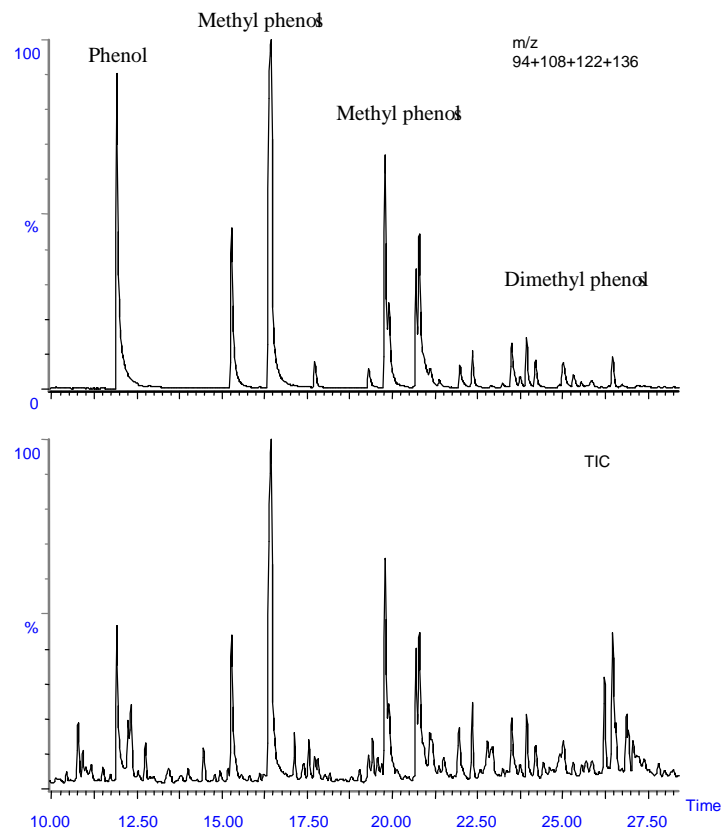


Figure 1. The phenolic compounds found in the kerogen pyrolysates from Middle Ordovician Limestone in well Konggu 4 in Huanghua Depression, Northern China.