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摘要:

生物气是产甲烷菌代谢的产物,其在沉积地层中形成及分布预测一定程度上要依赖产甲烷菌分布规律的研究。目前研究地层中产甲烷菌分布的主要技术方法是地层水中产甲烷菌记数法。考虑产甲烷菌对环境要求苛刻,微小变化均会改变菌群结构,导致测量结果与实际之间偏差明显;另新鲜地层水样系统采集实现起来也是困难重重。这导致该方法实际操作中的不可实现性。而利用沉积物中产甲烷菌特征化合物浓度来反应一定时间阶段内产甲烷菌的分布可以弥补细菌记数法的不足,而且方法简单、可操作性强。本文利用该方法系列分析了柴达木盆地三湖地区两口井中古细菌醇的变化规律,结果可见盐度无论在横向上还是纵向上均控制着产甲烷菌的分布:盐度相对高的沉积凹陷区,浅层(400m以上)产甲烷菌受到明显抑制,随后产甲烷菌活性增强,而且持续深度深达2000m;而凹陷边部涩北1号气田区,盐度相对较低,浅层抑制作用稍弱,产甲烷菌主要分布范围在1000m以上,1000m以下则由于埋藏过程中产甲烷菌的持续活动导致有机质大量消耗致使产甲烷菌活动减弱。最后,结合该区沉积古环境和盐度特征,划分出不同深度产气区分布规律。

关键词: [柴达木盆地三湖地区](#) [生物气](#) [产甲烷菌](#) [盐度](#) [古细菌醇](#)

Analysis of Methanogen Membrane Lipids and Its Application to Sanhu Depression, Qaidam basin [Download Fulltext](#)

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Abstract:

Biogenic gas is the product of methanogen in anoxic environment. Its formation and occurrence is controlled by the distribution of methanogen. The present method in studying the distribution of methanogen is MPN (numbers of methanogen). Because methanogen is strict with its environment, especially with the occurrence of oxygen, trivial change should disturb the bacterial collects and make the number different from the reality. Otherwise, collection of the fresh groundwater is difficult for us. All those make MPN turn to be hard to be dealt with. The concentration of some special biomarkers of methanogen, especially its core membrane components, could reflect the distribution of methanogen for a time. This method is simple and easy to operate, could make up the deficiency. In this paper, the distribution of archaeol, the core membrane structure components, is analyzed in the sediment from two wells in the Sanhu depression Qaidam basin. The results showed a good relationship between methanogen and salinity. In high salt area, the activity of methanogens was depressed in the shallow (above 1000m), and then turned to active up to 2000m. While in the surrounding area like Sebei 1 area, the salinity of sediment is much lower, the depression of methanogen in the shallow is slight that make methanogen mainly concentrate above 1000m and is low below 1000m. In the final, combined with the sediment palaeoenvironment and salinity of the sediment, the activation of methanogen in Sanhu depression is characterized.

Keywords: [Qaidam basin](#) [biogenic gas](#) [saline](#)

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