Characteristics of Hydrocarbon Precursors in Wufeng Formation and Longmaxi Formation, South China

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Abstract

In order to figure out the characteristics of microorganisms and the origins of organic matters of Wufeng Formation and Longmaxi Formation in South China, the types and amount of microorganisms were divided and counted in this study, based on the scanning electron microscope (SEM) microphotographs and data of microbial extraction, on this basis, the contributions of various microorganisms to organic matters were analyzed combined with the data of biomarkers and TOC. It can be deduced from the paleogeography and the ratios of Pr/Ph that the microorganisms of Wufeng Formation and Longmaxi Formation resided in 60m - 200m deep shelf with anoxic bottom water. Based on the analyzation of SEM microphotographs and microbial microscopic photographs, the microorganisms in Wufeng Formation and Longmaxi Formation can be divided into 4 types in general: acritarchs, fungi, benthic algae and green algae. The acritarchs are the most common microorganisms in Wufeng Formation and Longmaxi Formation with the average relative content of 61%. The average relative contents of benthic algae, fungi and green algae are 18%, 18% and 4%, respectively. According to the distribution characteristics of various microorganisms, the strata of Wufeng Formation and Longmaxi Formation can be divided into 3 sections, in which the relative content of acritarchs gradually decreased upwards, while the relative content of benthic algae gradually increased upwards. The multiple proxies of biomarkers prove that the eucaryon, especially planktonic algae, was the main source of organic matters in Wufeng Formation and Longmaxi

Formation. Combined with the statistical data of microorganisms, the organic matters in Wufeng Formation and Longmaxi Formation were mainly derived from acritarchs, which might be the organs of planktonic algae. The fungi had a significant contribution to the organic matters in organic-rich layers (TOC > 2.0%), while green algae and benthic algae made little contribution to the organic matters in Wufeng Formation and Longmaxi Formation.