

A Search for biomarkers in dissolved organic matter in hydrothermal systems

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Biomarkers from thermophiles were searched for in the dissolved organic matter collected from the hydrothermal systems of the Toyoha mine, and the Suiyo seamount. In this paper, the results of Toyoha are discussed as follows.

Samples were collected at three sites named A, B and C site. Samples from A and B sites are hot waters dropping from walls of galleries, C was a site where boring core was collected. 78L (A site), 51L (B site) and 57L (C site) of hot water samples were passed through the XAD2 resin. The adsorbates were eluted with methanol. The chloroform:methanol=1:2 soluble fraction of each eluted material was analyzed by GCMS. The GCMS analyses were performed before and after the conversion of the eluted materials into TMS derivatives.

Before the conversion into TMS derivatives, the chromatograms of all sites show mainly aromatic compounds, not characteristic for organisms, however, after the conversion into TMS derivatives, the chromatogram of C site shows several fatty acids as TMS derivatives. The observed fatty acids were C8:0, C10:0, C16:0, C18:0, C18:1. Iso-, anteiso-fatty acids were not observed. Archaeol, which is specific biomarker for archaea has not been observed as TMS derivative.