

ORGANIC GEOCHEMICAL STUDY OF ENDOLITHIC MICROBIAL
COMMUNITIES IN BEACON SUPERGROUP SANDSTONE,
ANTARCTICA (ABSTRACT)

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Hydrocarbons, fatty acids and hydroxy acids in 10 Beacon Supergroup sandstone samples with living and dead endolithic microbial communities from Linnaeus Terrace (LT1-LT6) and Mount Fleming (MF1-MF4) in the McMurdo Dry Valleys (Ross Desert) of Southern Victoria Land, Antarctica were analyzed to clarify their features and to elucidate the changes in organic composition during fossilization processes. A series of *n*-alkanes ranging in carbon chain length from *n*-C₁₃ to *n*-C₃₈ maximizing at *n*-C₁₇, *n*-C₂₂, *n*-C₂₅ or *n*-C₂₇ were found, along with isoprenoids pristane, phytane and phytene (isop-C_{20:2}), and/or a series of long-chain *anteiso*-alkanes (*a*-C₂₀-*a*-C₃₀). Steranes and triterpanes were detected in all the samples. A suite of *n*-alkanoic acids ranging from *n*-C₉ to *n*-C₃₂ were detected with the predominance of even-carbon numbers maximizing at *n*-C₁₆, together with *iso*- and *anteiso*-alkanoic acids, involving long-chain *anteiso*-alkanoic acids (*a*-C₂₀-*a*-C₃₀) and various amounts of *n*-alkenoic acids. Normal and branched 2- and 3-hydroxy acids were identified in some samples. These organic compounds reflect probably unique endolithic microbial communities in Antarctic harsher desert.

Normal alkenoic acids are abundant in the LT1, LT2 and MF2 samples, suggesting that these samples consist mainly of young organic matter due to living and/or recently dead organisms, while no *n*-alkenoic acids were found in the LT5 and MF4 samples implying that these samples are composed of very old organic matter. Especially, fatty acids found in the MF4 sample may have come from Gondwanaland sediment. Other samples are considered to be in the processes of fossilization.

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