

ORIGIN OF LONG-CHAIN ALKANES AND ALKANOIC ACIDS  
IN ENDOLITHIC MICROBIAL COMMUNITY OF THE  
MCMURDO DRY VALLEYS, ANTARCTICA  
(ABSTRACT)

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Hydrocarbons and fatty acids in endolithic microbial communities colonized in the Beacon Supergroup sandstone from Linnaeus Terrace, Mount Fleming and Battleship Promontory of the McMurdo Dry Valleys (Ross Desert), Antarctica were analyzed using a SHIMADZU GCMS-QP1000 gas chromatograph-mass spectrometer equipped with a fused silica capillary column (DB-5, 30 m × 0.32 mm i.d.) to clarify their biogeochemical features and to understand source organisms. Unusually, a series of long-chain *n*-alkanes (C<sub>20</sub>-C<sub>36</sub>) with near unity odd/even-carbon ratios and long-chain *n*-alkanoic acids (C<sub>20</sub>-C<sub>32</sub>) with an even-carbon number predominance were detected mainly in lichen-dominated community, but not in cyanobacterial and algal communities or black fungi isolated from similar rocks. These long-chain compounds frequently were accompanied by a suite of long-chain *anteiso*-alkanes (C<sub>20</sub>-C<sub>30</sub>) with a predominance of even-carbon numbers and long-chain *anteiso*-alkanoic acids (C<sub>20</sub>-C<sub>30</sub>) with an odd-carbon number predominance. It is very likely that these long-chain components have originated from unidentified colorless bacteria associated with lichen. These novel long-chain *anteiso*-alkanes and *anteiso*-alkanoic acids may be important biomarkers in geochemical and environmental studies.

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