

Simple Lipids of New Zealand Thermophiles

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This presentation summarizes the results of research into the discovery and structural elucidation of simple lipids from some novel thermophiles found in New Zealand.

Bacterial simple lipids are usually very different from simple lipids found in eukaryotic organisms. Bacteria often contain various triterpenoids, including squalenes and hopanoids. It has been postulated that they play important roles in stress adaptation, protection against oxygen and in maintaining membrane fluidity. However simple lipids have not been characterized for most bacteria species.

A first cultivated thermophilic bacterium of the novel phylum Armatimonadetes, *Chthonomonas calidirosea* (strain T49^T), was isolated from soil samples from Hell's Gate in the Tikitere geothermal system. *C. calidirosea* contains interesting set of simple lipids all derived from squalene including squalene itself and partially hydrogenated squalenes. A number of hopanoids were identified, including diploptene, bacteriohopanepolyol cyclitol ethers, guanidine-substituted cyclitol ethers, unsubstituted bacteriohopanetetrol and bacteriohopanepentol.

Another thermophile, *Thermogemmatispora* sp. (strain T81) is a recently described bacterium isolated from geothermally heated soil at Hell's Gate. Beside novel dimethyl-branched fatty acids it possess set of straight hydrocarbons with the chain length from 16 to 31 carbon atoms. Even-numbered hydrocarbons from C16 to C20 were alkenes predominantly with Δ^5 unsaturation and their saturated analogs. The ratio of saturated:unsaturated compounds increased with increasing chain length.