Sterol Composition of Freshwater Sponges from Minnesota

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Freshwater sponges (Phylum: Porifera, Class: Demospongiae) made the evolutionary leap from marine to freshwater habitats during the Jurassic period. The diversity of freshwater sponges is limited to about 250 species of which 31-33 species were described from the Nearctic region which includes the United States. The described species fall into three families, and 17 genera.

We surmised that the likelihood of discovering new sponge species in Minnesota is high and embarked on determining the diversity, distribution, and the chemical composition of freshwater sponges in Minnesota lakes and rivers. Phase 1 of the project is complete. Our research group collected over 100 samples of sponges from various rivers and lakes primarily in Northern Minnesota.

Each sponge sample was extracted with two organic solvents (dichloromethane and methanol). The organic extracts ranged in weight from 0.0001 grams to 0.1 grams. All extracts were analyzed by Gas Chromatography coupled to a Mass Spectrometer (GC-MS). Analysis of the GC-MS data showed the presence of a series of 3-hydroxy sterols and corresponding enones. Sterol identification was made based on camping with a spectral database. Some sponges contain other compounds such as long chain carboxylic acids, alcohols, and aldehydes as well. In this poster, we will report the relative composition of sterols in various sponges.