

Northern Quebec lichen yields two unique molecules and several antibacterial compounds

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Two unique molecules have been discovered by Université Laval researchers in a species of lichen growing in northern Quebec. A number of compounds with interesting antibacterial properties have also been isolated from the lichen according to an article published in the latest issue of *Journal of Natural Products*.

"Lichens in the North are exposed to unique environmental stresses, says Normand Voyer, chemist, professor at the Faculty of Science and Engineering, and lead author of the study. We thought that these species might produce special [molecules](#) to cope with these very rugged conditions."

The lichen in question, *Stereocaulon paschale*, generally lives in subarctic and arctic regions of the planet, but can also be found on mountain peaks in the Gaspésie and Charlevoix regions. Professor Stéphane Boudreau, of the Biology Department, brought back specimens from Nunavik. Phytochemical analyses yielded 11 [compounds](#), two of which were new molecules that had never before been isolated anywhere on Earth.

The nine other compounds the researchers isolated have already been identified in other living organisms. However, tests conducted by Daniel Grenier, professor at the Faculty of Dental Medicine, have resulted in another discovery: six of these compounds show potentially interesting antibacterial activity against pathogens that cause problems such as dental caries and periodontal disease.

"It's still too early to know whether the two molecules we've discovered have specific properties that could have medical or industrial applications," explains Normand Voyer. "However, the objective of our study was not to provoke a

rush to the molecular treasures northern Quebec species may contain. Rather we wanted to demonstrate that there is a hidden wealth of naturally occurring compounds in northern environments that need to be studied and protected. Numerous phytochemical studies have been carried out in tropical forests, but the North remains largely unexplored. There are surely many other northern species that, like *S. paschale*, contain unique molecules. We may find the next cancer treatments in these regions. If we do find [natural compounds](#) that have useful applications, it will be important to develop methods for synthesizing them in the lab so as not to jeopardize the survival of the [species](#) that produce them."

The study was published in the *Journal of Natural Products*.

Provided by Laval University

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