Research on the Antibacterial Activity of Jeju Seaside Lichen

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Lichens are little researched organisms with much potential as some studies show that they have antibacterial activity. They only grow in select places with unpolluted air and water, thus its living in a clean island like Jeju. But even in Jeju, known for its clean environment, there are harsh locations unfit for lichen, such as seasides. However, many seasides in Jeju house an abundance of lichen. We thought that these lichens might be different from the lichen used in former studies and wanted to see if they had special antibacterial properties, as former research had shown that some lichen did have antibacterial properties. However, we found that same types of lichen from different areas showed different levels of antibacterial activity, and we wanted to find out why. We decided to work with the lichen research center at Suncheon National University and ran a HPLC test to work out the amount of different substances in Ramalina yasudae lichen (formerly proven to have antibacterial qualities). We extracted the substances from the lichen using acetone and DMSO solvent, and we extracted from each lichen two times. The first acetone extract of each lichen all contained substantial amounts of salazinic acid, gyrophoric acid, obtusatic acid, and usnic acid. However, the DMSO solvent only showed small amounts of gyrophoric acid and usnic acid. While doing this process, we found out that one of the lichens contained colensoic acid, which we found showed antibacterial activity.

Awards Won: