

Current Results on Biological Activities of Lichen Secondary Metabolites: a Review

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Z. Naturforsch. **65c**, 157–173 (2010); received October 2/November 4, 2009

Lichens are symbiotic organisms of fungi and algae or cyanobacteria. Lichen-forming fungi synthesize a great variety of secondary metabolites, many of which are unique. Developments in analytical techniques and experimental methods have resulted in the identification of about 1050 lichen substances (including those found in cultures). In addition to their role in lichen chemotaxonomy and systematics, lichen secondary compounds have several possible biological roles, including photoprotection against intense radiation, as well as allelochemical, antiviral, antitumor, antibacterial, antiherbivore, and antioxidant action. These compounds are also important factors in metal homeostasis and pollution tolerance of lichen thalli. Although our knowledge of the contribution of these extracellular products to the success of the lichen symbiosis has increased significantly in the last decades, their biotic and abiotic roles have not been entirely explored.

Key words: Lichens, Secondary Compounds