

NEW ANALYTICAL APPROACHES TO PROFILE LICHEN METABOLITES

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Analyzing lichen metabolites is a challenge to reveal the variety of unique compounds produced by lichens. Opportunities offered by new analytical techniques as High Resolution Mass Spectrometry (HR-MS) result in a wider and more accurate information to characterize a large diversity of the so-called Specialised Lichen Metabolites (SLMs). Lichen chemistry can benefit of new approaches as HR-LC-MS/MS techniques to enter in metabolomics. In this way, we established an open access tandem mass spectrometric library with 250 lichen metabolites, providing a comprehensive coverage of lichen biodiversity (<https://doi.org/10.1038/s41597-019-0305-1>) Most standards were obtained from the Berlin Garden and Botanical Museum from the collection of Siegfried Huneck and were complemented with the Rennes chemical library to include most of the common lichen metabolites. The Lichen Database (LDB) has been uploaded to the GNPS platform (<https://gnps.ucsd.edu/ProteoSAFe/libraries.jsp>) and MetaboLights (<https://www.ebi.ac.uk/metabolights/MTBLS999>) to offer a versatile tool for a sharp chemical profiling of lichens. This approach reveals a larger and unexpected variety of lichen metabolites compared to the thousand described SLMs. Such a tool to recognise new metabolites within minute amount of lichen material and Molecular Networking approaches are incentive for an efficient research focused on bioactive lichen compounds but also for chemotaxonomy and chemical ecology. Additionally, in situ lichen MS Imaging is also highly informative to have a better understanding of SLMs' mediated relationships as the major compounds can be histolocalized within the lichen thallus (DOI: 10.1038/srep37807). Interest and limitation of these analytical approaches will be exemplified and discussed.