RESEARCH METHODS IN MODERN TAXONOMY OF LICHENS

Summary

Lichens are symbiotic associations, composed of a fungus and green alga, and/or cyanobacterium, but lichen systematics deals with their fungal partners and photobionts are classified separately. In the paper research methods used in lichen taxonomy are briefly reviewed. Besides morphological and anatomical studies, chemotaxonomy became a very important tool for identification of lichens. Using simple spot tests, microcrystal tests and chromatography (TLC, HPTLC and HPLC) secondary metabolites are identified. With the introduction of molecular approaches, traditionally used characters, such as anatomy, morphology and chemistry need to be re-evaluated. Cryptic species are identified based on molecular variation and hidden biodiversity is being discovered. For many years identification of lichen photobionts was possible only after isolation and aposymbiotic growth of an algal strain. However, using specific primers appropriate molecular markers are amplified and the algal partners are identified without time-consuming *in vitro* culture. DNA markers used as barcodes provide a new tool for determination of species. Moreover, the development of information technology created new opportunities for dissemination and exchange of taxonomical data. On-line databases containing information on lichens from particular areas, newly described taxa, DNA barcodes, taxonomical literature etc. and interactive determination keys are being developed.