DO NOT JUDGE BY APPEARANCE! – RESULTS OF A MORPHOMETRIC ANALYSIS ON THE *CLADONIA CHLOROPHAEA* SPECIES GROUP RICH IN LICHEN SECONDARY METABOLITES

Ne ítélj a külső alapján! – A másodlagos zuzmóanyagokban gazdag *Cladonia chlorophaea* fajcsoport morfometriai vizsgálatának eredményei

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Cladonia is one of the most species-rich lichen genus characterised by variable appearance and high chemical diversity. The species belonging to the *Cladonia chlorophaea* group are characterised by a horizontal thallus and a densely sorediate podetium (consisting of a stalk and a cup). They occur mainly on soil but are also found on bark or dead wood. The morphological characters, differentiating these species according to the literature data usually given, are less obvious because the range of values broadly and often overlaps. Moreover, identification, based on additional lichen secondary metabolite analysis, needs facilities of limited access, available only for a few specialists. To find a possibly easier, still an adequately precise method for differentiating these species based on their secondary metabolite composition, we focused on revealing the most relevant properties of the species within the *C. chlorophaea* group. Therefore a chemical and a morphometric analysis were carried out simultaneously. The 281 Hungarian specimens kept in herbaria as *Cladonia chlorophaea* s. l., were revised by high-performance thin-layer chromatography. A detailed morphometric study of 227 podetia was carried out on selected specimens, where the size of podetia, cup, stalk, soredia and squamules were measured and analysed. Conditional inference trees were created to separate the species according to chemical and morphological characteristics. The chemical analysis allowed to separate *C. asahinae*, *C. cryptochlorophaea*, *C. grayi*, *C. merochlorophaea* and *C. novochlorophaea* from *C. chlorophaea* s. str. Three species, *C. asahinae*, *C. grayi* and *C. novochlorophaea*, represented new distribution records to Hungary. Specimens containing cryptochlorophaeic acid and thamnolic acid were mainly *C. cryptochlorophaea* (around 85%). Specimens containing rangiformic acid were mainly *C. asahinae* (around 75%), while this metabolite was always missing from the specimens of *C. chlorophaea*, *C. grayi* and *C. novochlorophaea*. Among the morphological characters size of the podetia seemed to be the most relevant properties. *C. asahinae* and *C. cryptochlorophaea* were found to be usually smaller than the robust *C. chlorophaea* or *C. merochlorophaea*. Our results revealed that the separation of *C. chlorophaea*-like specimens by chemical analysis is more reliable compared to morphometric analysis. This research was supported by the grant NKFI K 124341.