Abstract

The principal goal of my study was to find if ecologically and chemically different populations of lichens in the *Physconia muscigena* (Ach.) Poelt group belong to several species or a single one. This study focused on the molecular and chemical investigations of mostly European and Canadian populations. I use sequence data from three genes (ITS rDNA, mtSSU rDNA and TEF1) for the reconstruction of phylogenetic trees. I investigate phylogenetic relationships among the closely related species *P. muscigena, P. bayeri, P. rossica,* and *P. isidiomuscigena*. Also, I wanted to detect any possible geographical or ecological trends among chemotypes and haplotypes. As an additional goal I checked the recent localities of *P. muscigena* in the Czech Republic for valorising its conservation status.

Results show that: (1) sequenced data of ITS rDNA and TEF1 show high intraspecific variability in *P. muscigena* samples. This genetic variability does not correlate neither with geographical distribution nor thallus chemistry; (2) *P. bayeri* is synonymous with *P. muscigena*; (3) some samples *P. muscigena* contain new undetermined secondary metabolite, (4) *Physconia muscigena* has only three recent localities in Czech Republic.

Key words: *Physconia muscigena*, *Physconia bayeri*, infraspecific variability, taxonomy, TEF1, ITS rDNA, mtSSU