ABSTRACT

Lichens represent a synergistic combination of at least two organisms, a heterotrophic fungus and a photosynthetic alga or a cyanobacterium. This association has resulted in a symbiotic organism, which is well tolerant to environmental influences. In fact, symbiotic relationship provides mutual benefit for both organisms.

It is generally well known that the fungal partners of lichens are far less sensitive to environmental conditions, such as the temperature, altitude, rainfall or the type and composition of the substrate, in comparison to their algal partners. Therefore, lichen forming fungi have much wider ecological valences than the photobionts interacting with them. Indeed, most of the photosynthetic genera and species are adapted only to certain environmental conditions. For this reason, the symbiotic algae and cyanobacteria probably play a major role during the initial lichen formation on the site.

This thesis focuses on the adaptability of photoautotrophic symbionts of lichens, coccoid green algae and cyanobacteria, to environmental conditions. Ecological diversification of photobionts has a direct impact on their genetic differentiation and thus to differentiate lichen species themselves. Unfortunately, in many studies the authors mostly dealt with the diversity of macroscopic symbiotic partners only. The ecology of the photobionts was often overlooked or poorly explored. Therefore, our recent knowledge of the lichen ecology can be significantly distorted.

Keywords: photobiont, mycobiont, diversity, specificity, selectivity, environmental conditions