

Taxonomic, ecological and phylogenetic investigation of lichens belonging to *Acarospora cervina* group in Turkey

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Aim of the study: In this study, it is aimed to examine taxonomic, ecological and phylogenetic relationships the lichen samples belong to *Acarospora cervina* group, which is widely spreaded in our country.

Material and Methods: Many samples of lichens belonging to *Acarospora cervina* group were collected from different parts of Turkey. The external morphology has invariably been studied under dissecting binocular microscope. The anatomy of the thallus and apothecia were studied under compound microscope. The asci and ascospores were observed from the sections when sections were mounted in water and shapes, sizes were recorded. Chemistry of the specimens includes spot tests. DNA isolation was performed by using Qiagen DNeasy plant mini kit. PCR analysis was performed by using ITS (ITS1 and ITS4) and mtSSU (mrSSU1 and mrSSU3R) primers. The phylogenetic analysis of lichen samples belonging to *Acarospora cervina* group were performed by using the Maximum Likelihood method of the Mega 6 (Molecular Evolutionary Genetics Analysis) software program.

Results and Discussion: The taxonomic and ecological characteristics of lichen samples belonging to *Acarospora cervina* group were compared with each other. Sequence results of DNA-isolated lichen samples were used to examine the region of interest between species. The phylogenetic analysis for ITS and mtSSU sequences are performed with the investigated samples and also with the samples obtained from Genbank. The analysis are conducted by the help the maximum likelihood method in order to reveal the phylogenetic relationships between our studied samples. When we examine the Maximum Likelihood dendrogram, it is observed that species are separated into two main branches. The species which is considered out group forms one of the branches, while *Acarospora cervina* group are grouped together.

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Keywords: Lichens, ITS, mtSSU Maximum Likelihood, Phylogenetic analysis, *Acarospora cervina* group.