

## THE BIODIVERSITY OF LICHENS AND THEIR BIOMEDICAL POTENTIAL

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Lichens are among the lower plants that are widely distributed on earth. In the science of lichenology, many scientific papers have been published by domestic and foreign scientists related to the species composition, structure, ecological significance, bioindicative properties of lichens and their areas of application [1-7]. The research work is based on the species, ecology and biological features of lichens distributed in various biomes of the Abay region. The study of 25 species of lichen distributed in the forests of pine (*Pinus sylvestris* L.) of Semey and the eastern part of small Kazakh mountains was carried out using different methods. The work on the identification of the studied species was carried out using a raster electron microscope. The collected 25 henna species were combined into 12 genera in 9 family.

Depending on the ecology, epiphytic -7, epigeal - 7, epilithic-10 and one species indifferent were grouped into species. Due to meeting frequencies, *Cladonia rangiferina* was identified as the dominant species in pine forest biomes, and *Parmelia vagans* in mountain hills, on the contrary, if it was known that the species with low meeting frequencies was *Physcia leptalea*, which grew in forest biomes, and *Parmelia sulcata* species in mountain hills were attributed.

Through the use of a raster electron microscope, the ways of reproduction of lichens (apothecium, perithecium, soridium, isidium) were determined. Below is an example of a scanner photo of a rare, epilithic lichen species of the Lecanoraceae family - *Lecanora allophana*

The period of formation of ellipse-shaped spores.

Among the most common species of lichen in the different biomes studied are as a bioindicator in solving environmental problems by quantitative indicators (*Cladonia*, *Peltigera*, *Hypogymnia*), in obtaining natural coloring (*Caloplaca*, *Lecanora*, *Acarospora*) and in pharmacology medicinal plants (*Parmellia*, *Cetraria*, *Peltigera*). It is necessary to consider the possibilities of studying the ways of using species belonging to the genera mentioned as *Cladonia*.

In conclusion, the biodiversity of lichens reflects not only their ecological significance, but also their biomedical potential. These studies require further comprehensive study of lichens in Kazakhstan and show that they have a high potential for widespread use in the field of biotechnology and pharmaceuticals.

**Key words:** Lichen, Semey pine forest, small mountain hills of the East.

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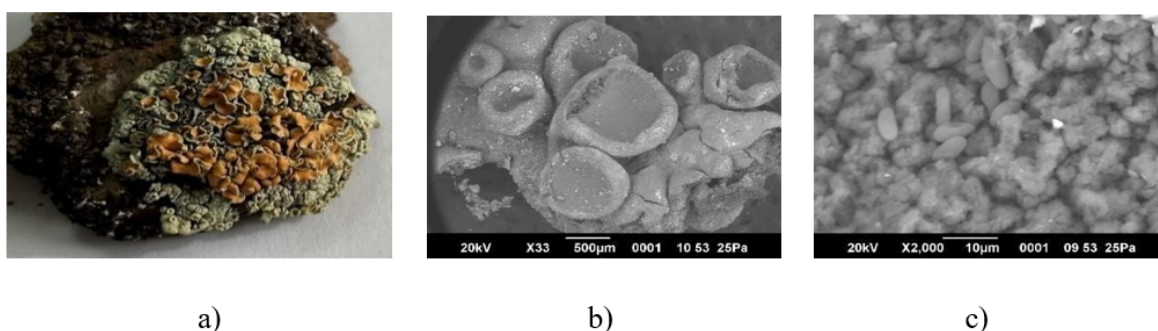


Figure 1. a) General view of the epilithic species *Lecanora Allophana*; b) apothecary part; c)

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