

ANATOMICAL STRUCTURE HYPOGYMNIA PHYSODES (L.) NYL

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Annotation: In this article, the internal standing of HYPOGYMNIA PHYSODES (L.) NYL., Which is one species of lichen, was studied. The internal structure consists of two organisms: algae and fungal mycelium. The internal structure also consists of organic and inorganic substances.

Key words: Hypogymnia physodes, algae, fungus, blueberry, ledum, bracken and heather pine forests

It was found that there is no correlation between the thickness of the upper crust, the thickness of the lower crust, the diameter of the algae, the diameter of the hyphae of the lichen fungus and the content of secondary metabolites in the crustal layer. In the course of the work carried out, it was also found that the age and crown density of the pine plantation, as well as soil moisture, do not affect the thickness of the upper and lower crust, the diameter of algae and hyphae of the lichen fungus Hypogymnia physodes and are not related to the content of secondary metabolites in the crustal layer of the studied thalli.

As a result of the studies, it was found that the thickness of the upper crustal layer of the lichen Hypogymnia physodes growing in different types of pine forests is statistically different. In particular, the thickness of the upper bark of the thallus in lingonberry, ledum, bracken and heather pine forests is 5.95-6.77 microns.

Lichens have bark, leaf, and shrub forms. Bark L. simple structure; granular, powdery or crusty. Leafy L. is more complex, in the form of plates. Shrub L. is a more complex structure, reminiscent of a plant with drooping or erect branches. According to the anatomical structure of L., it is homeo-omer (algae are evenly distributed throughout L.'s body) and heteromer (algae are located just below the upper crust of L.'s body).



L. reproduces sexually and asexually vegetatively. In asexual reproduction, L. spore spores form in sacs (sacs L.) or sometimes in basidia (basidia L.). Asexual reproduction produces conidia and pycnosporos. The spores of the fungus grow and combine with the corresponding algae species to form a new L. thallus, a vegetative body, and vegetatively propagate through a small part of the L. thallus. The algae in L. divide, and the green algae multiply to form autospores. During sexual reproduction, algae and fungi in L.'s body reproduce separately.

L. does not have a special body to absorb water; they soaked the water through the entire

surface of the thallus. The rate of photosynthesis in algae depends on the amount of water in the L. thallus; When L. is seen, photosynthesis slows down or stops. The bark L. grows more slowly than the bush L. L. grows an average of 0.01 mm to 100 mm per year. An increase or decrease in temperature has little effect on L. L. occurs in a variety of well-lit substrates - trees, rocks, soil and leaves of green plants, skins, bones, paper, glass, iron and other objects. L. is present on all continents. Widespread in tropical and subtropical regions, especially in tundra and high mountains. Until recently, the relationship between fungi and algae in L.'s body was described as symbiotic. In fact, the relationship between them is based on parasitism, especially the parasitic nature of the fungus. L. prepares the ground for other plants due to its growth in infertile areas. Some shrubs L. are the main food for deer. Medicinal (laxative, emollient, antihypertensive, vitamin, antibiotic) L. is also available. Antimicrobial drugs were also obtained from L.. Some L. are used in the perfumery industry, in the manufacture of litmus and paints. The bark L. that grows on the trunks of trees is negative because it is a shelter for pests.

It was statistically established that the thickness of the upper crustal thallus layer in the moss, sedge and sedge-sphagnum pine forests is greater and varies within 7.67-8.06 microns. The thickness of the upper crustal layer of lichens growing in blueberry and grassy pine forests varies within 7.17-7.22 microns and does not statistically differ from those of thalli collected in other types of forest growing conditions.

The thickness of the lower crustal layer of the lichen *Hypogymnia physodes* and the diameter of the algal cells of the thallus growing in different types of pine forests do not differ statistically and vary within the limits of 5.38 - 7.37 μm and 3.16 - 3.99 μm , respectively. Differences in the thickness of fungal hyphae were noted in thalli growing in different types of pine forests.

In particular, the largest diameter of hyphae was observed in lichens growing in ledum, lichen and long moss pine forests (1.23-1.28 μm), the smallest in sedge, tame-grass, heather, bilberry, bracken, lingonberry and sedge-sphagnum pine forests. (1.07-1.17 μm).

The presence of the photosynthetic component transforms the fungal heterotrophic organism into an autotrophic association, for the existence of which only water, air, mineral salts and a substrate for attachment are needed. Probably, it was this fact that allowed lichens to develop unfavorable habitats and turn into a prosperous group with high taxonomic diversity.

Algae can be located in one layer, then thallus is called heteromeric, or evenly throughout the thallus - homeomeric thallus. On a cross section of heteromeric lichens, the thallus is always covered with an upper crustal layer, under which a thin layer of algae is located (algal zone). Below is the medullary layer, sometimes called the pith, of loosely intertwined hyphae, and below the thallus is underlain by the lower crustal layer.



Functions of the cortex: protective; support; attaching (rhizoids are formed on the lower crustal layer); gas exchange (through perforations (dead parts of the crustal layer), cracks and breaks in the crustal layer).

Algae Zone Function: photosynthesis; accumulation of organic matter.

Core function: conducting air to the cells of algae; supporting function (in some fruticose lichens).

Lichens mainly form: mushrooms - ascomycetes and basidiomycetes; algae are most often green (cyanobacteria are less common).

The essence of symbiosis: The alga gives the fungus organic substances obtained in the process of photosynthesis. The fungus, having an extensive mycelium, provides the alga with water and minerals.

Such symbiosis of certain types of fungus and algae is so stable that they are perceived as a certain type of organisms.

Conclusion

As a result of the studies, it was found that there is no correlation between the thickness of the upper crust, the thickness of the lower crust, the diameter of algae, the diameter of the hyphae of the lichen fungus and the content of secondary metabolites in the crustal layer. Lichens (Latin: Lichenes) are organisms that are symbiotic complexes of fungi and algae and / or cyanobacteria. However, the morphology, physiology, and biochemistry of lichens differ from those of fungi and algae. The range of lichens is extremely diverse, they can be found in cold, humid climates, hot and desert conditions, but they are also sensitive to environmental changes. Lichens are used in the manufacture of paints, perfumes and medicine. It was also found that the age and crown density of the pine plantation, as well as soil moisture, do not affect the thickness of the upper and lower bark, the diameter of algae and hyphae of the lichen fungus *Hypogymnia physodes* and are not associated with the content of secondary metabolites.

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