

# Medicinal Mushrooms of Armenia: Biodiversity and Ecology

Siranush G. Nanagulyan, Alina L. Sirunyan, and Eva Kh. Hovhannisyan

Department of Botany, Faculty of Biology, Yerevan State University, 1 A. Manougian Str., Yerevan 375025, Armenia

The assessment of the state of biodiversity of different groups of organisms, in particular of mushrooms having medicinal value, is one of the most important current problems.

Mushrooms are very significant supplemental source of protein, animal feed, and various biologically active substances for food and pharmacological industries. They are widely used in many branches of the economy, in traditional national medicine, and in pharmacology dating back to ancient times. In different countries the species diversity of edible and medicinal wild mushrooms varies. Species diversity is related to ecological conditions and traditional public knowledge of the biota of the location. The tradition of studying medical properties of mushrooms in Armenia has ancient roots. We found the first mention of medical properties of mushrooms while viewing the manuscripts in the book repository "Matenadaran" in the works of the 15th century Armenian doctor, Amirdovlat Amasiatzi. Mycological research in Armenia began at the beginning of 20th century, when botanists collected materials on mushrooms during their phytopathological studies. Further mycological studies continued in various taxonomical and ecological groups, focusing on their biodiversity, distribution, ecology, phytocenology, taxonomy, biochemistry, and physiological activity.

This report is based on the authors' data from the study of the distribution of mushrooms with medicinal properties in Armenia. Macrofungi collected from different regions of Armenia and critically processed from the herbarium collections, as well as data known from the published literature, have served as baseline materials in the present work.

Despite being a relatively small country

covering over 5% of the Caucasus region, Armenia is known for its very rich and peculiar plants, a composite mountainous relief, and unique climate conditions. This has a significant impact on the biodiversity of the country's mushrooms. We estimated the state of research of all macrofungal species, and created a database that includes all information about distribution and medicinal properties of macrofungi growing in Armenia.

As a result of the study of the taxonomic structure of the investigated mushrooms in Armenia, 90 species have been established, which belong to 34 families and 59 genera. The macromycetes identified belong to the division Eumycota, subdivisions Basidiomycotina and Ascomycotina. Analysis of the systematic units of mushrooms in a rank of classes shows an indisputable prevalence of Homobasidiomycetes—68 species (75.6%)—and Gasteromycetes—14 (15.6%). According to their means of nutrition and the function they carry out in different phytocenoses, we can divide the researched species of mushrooms into 6 tropical groups: xylotrophs (39 species), humus saprotrophs (25), mycorrhizal fungi (20), coprotrophs (3), psammotrophs (2), and litter saprotrophs (1). Among the registered wild fungi, 50 species are edible and 4 species are poisonous. Only two species—*Agaricus bisporus* (J. Lge) Imbach and *Pleurotus ostreatus* (Jacq.: Fr.) Kumm.—are found in special cultivated areas in Armenia.

Our investigation shows that every species could potentially be of some commercial or medicinal value. Modern medicine is taking a deep interest in these mushroom species in the hope of discovering new cures. The research in this field will continue.