

Culture Collection of Medicinal Mushrooms in Armenia

Susanna M. Badalyan

Yerevan State University, 1 Aleg Manoogian Str., 375025 Yerevan, Armenia

Modern mycological studies in systematics, ecology, physiology, biochemistry, and genetics are being conducted on both generative and vegetative stages of mushroom life history. For these purposes, establishment of a culture collection of different systematic groups of mushrooms is not the only way of preserving mushroom biodiversity but also a very important step for mycological research organization. It is well known that Higher mushrooms produce (either by the mycelia or by the fruiting bodies) different biologically active metabolites (BAMs) with a wide spectrum of therapeutic actions (antitumoral, antibacterial, antifungal, antiviral, immunomodular, hypoglycemic, hepatoprotective, etc.). Our long-term investigation of antibacterial, antifungal, antioxidant, immunomodular, enzymatic (fibrinolytic), and pharmacological (spasmolytic, hypoglycemic) activities of more than 55 species of macrofungi proved that they are promising for practical applications in pharmacology and medicine. Based on ethnomycological experiences and modern mycopharmacological studies, a new group of Medicinal Mushrooms (MMs) among macroscopic fungi was recently distinguished. At present, several representatives from this group are being investigated successfully in laboratories worldwide as a natural source of BAMs and as prospective sources for obtaining new biopreparations, enzymes, organic acids, and other bioproducts. However, the creation of culture conditions, determination of the specificity of species strains' nutrition physiology, and optimization of mycelial growth in submerged cultures are the preliminary steps in arranging mycelial cultivation in fermentors. These results will also promote the introduction of previously screened active mushroom strains in biotechnological processes and will be conducive to obtaining large

amounts of mycelial biomass. On the other hand, the mycopharmacological and biochemical investigations of mycelial cultures will reveal strain-specific fungal potential as a source of BAMs. From the aforementioned, it follows that it is a very important tool for establishing specialized fungal culture collections, producers of BAMs in particular.

The recently established collection of MMs in the Laboratory of Experimental Mycology at the Yerevan State University presently includes more than 40 living species and 100 strains of macroscopic fungi. Among them are the cultures of *Ganoderma lucidum* (Curt.: Fr.) P. Karst., *Schizophyllum commune* Fr.: Fr., *Lentinus edodes* (Berk.) Sing., *Kuhneromyces mutabilis* (Scop.: Fr.) A. H. Sm. et Sing., *Marasmius oreades* (Bolt.: Fr.) Fr., *Flammulina velutipes* (Curt.: Fr.) P. Karst., *Pleurotus ostreatus* (Jacq.: Fr.) Kumm., *Coprinus* spp., *Pholiota* spp., *Agrocybe aegerita* (Brit.) Sing., and other species. Collected mushrooms belong to the classes of Basidiomycetes, Ascomycetes, and Gasteromycetes, including six orders—Agaricales, Boletales, Lycoperdales, Schizophyllales, Poriales, and Ganodermatales—with 22 genera and 14 families. The collection also includes 26 and 4 species of edible and poisonous mushrooms, respectively. The cultures were separated from fruiting body tissues and spore prints. The basidiomas were collected in different regions of Armenia, in the former Soviet Union, as well as in Europe (France, Germany, Italy, and Russia). Several strains of collected species obtained from different culture collections are also preserved.

Extension of the number of species strains, ecological and geographical diversification of the MM culture collection, and the creation of the information database are in progress.