

02-2 Biotechnological Role of Culture Collections of Polypore Mushrooms (Basidiomycota, Polyporales)

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Many basidiomycete mushrooms including polypores (Basidiomycota, Agaricomycetes, Polyporales) are natural source of food, valuable bioactive substances and enzymes [1,2,5-8]. They are considered as perspective organisms for developing novel biotech products with mushrooms origin. Bioactive metabolites of polypore mushrooms are mainly belongs to the polysaccharides, glucans, terpenoids, phenolic compounds, etc. [1,6]. Species from genera *Ganoderma*, *Fomes*, *Fomitopsis*, and *Trametes* are reported as a source of glucans, phenolic compounds and terpenoids with immune-modulating and antimicrobial activities, respectively [5-7]. Presently many mushroom products with preventive and curative therapeutic effects are available in the world market. Polypores are also known as producers of lignin and cellulose degradating enzymes (laccases, peroxidases) which are applicable in bioremediation processes [3,4,8]. Despite of their commercial importance, however, there are many gaps to be filled in the current knowledge on taxonomy and biology of polypores.

Studies of biodiversity and genetic resources, establishment and maintenance of specialized culture collections are necessary steps for their further cultivation. Polypores cultures collections are of valuable importance to study biological (morphological, ecological, physiological, biochemical, genetic) characteristics and medicinal properties, as well as biotechnological potential of this group of organisms.

In our preliminary studies of polypores collections variability in morphological, physiological and ecological characteristics of mycelia of *Ganoderma*, *Fomitopsis* and *Fomes* were revealed. Genetic identification of *Ganoderma* collections from Armenia, France, Iran, Italy and China showed that Armenian, Italian and French collections of *G. lucidum* were placed in the European *G. lucidum* clade. The sequence analysis revealed that Armenian collections of *G. lucidum* were of monophyletic origin with the Italian *G. lucidum* genotype and the French *G. resinaceum* was closely related to *G. lucidum* species from USA. The species *G. adspersum* was originally reported for Armenia. The genetic analysis of Russian polypores collections

revealed that the polymorphism based on DNA-markers and *vc*-loci analyses was higher for *Ganoderma applanatum* natural strains as compare to *Fomes fomentarius* and *Fomitopsis pinicola* isolates. Mating compatibility in *Fomitopsis pinicola* collections was shown to be controlled by two unlinked mating type loci with multiple alleles in contrast to bipolar mating system in *Fomitopsis rosea*.

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