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VIABILITY AND STABILITY OF AQUATIC FUNGI OF BIOTECHNOLOGICAL INTEREST AFTER LYOPHILIZATION

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Microorganisms are inexhaustible and advantageous sources of bioactive substances (antibiotics, vitamins, proteins, food additives, enzymes, organic acids, biopreparations for agricultural use, etc.), for which they are widely used in biotechnology. The sustainable functioning of national collections of microorganisms and their permanent completion is a key necessity for the further expansion of biotechnologies in all industrially developed countries. Fungi are a permanent component of aquatic ecosystems and belong to important microbial communities for organic decomposition, nutrient cycle and energy flows. Of particular interest are the obligatory aquatic species, i.e. those that not only appear and develop actively in water, but, most importantly, cannot reproduce outside the aquatic environment, but are also migratory fungi. Ecological groups found in the seas and freshwater include terrestrial fungi. According to data from various scientific publications, in freshwater environments, the most commonly detected are fungi representing the species: *Aspergillus*, *Penicillium*, *Trichoderma*, *Talaromyces*, *Acremonium*, *Alternaria*, *Fusarium*, *Mucor*, *Rhizopus*. Aquatic fungi produce hydrolytic enzymes that degrade many compounds, thus contributing to the purification of aquatic environments. In addition, they have a high metabolic capacity for carbon sequestration and are believed to be key elements in the carbon cycle and regulators of the global climate. The method of storage of microorganisms of industrial interest is important for any microbiological investigation, and their long-term conservation, without obvious modification of morphological-cultural and biochemical characters is a task of major importance for any collection. The aim of the research was to evaluate the viability and stability of aquatic fungi of biotechnological interest after lyophilization. The object of study was served 20 strains of aquatic fungi, isolated from the lake La izvor, which possesses significant enzymatic and antimicrobial activity. The strains were lyophilized in the defatted milk + 7% glucose protection medium. After lyophilization, the viability, enzymatic activity (catalase), and antifungal activity against phytopathogens were evaluated: *A. niger*, *Alt. Alternata*, *B. cinerea*,

F. solani, *F. oxysporum*. The results obtained in the researches showed that the viability of aquatic fungal strains after lyophilization varies within the limits of 92.8-99%, compared to the initial titer, up to lyophilization. The antifungal activity of the strains, compared to phytopathogenic fungi, after lyophilization was approximately at the level up to lyophilization. Enzymatic activity (catalase) did not change significantly after lyophilization. Also, after lyophilization no changes of morphological and cultural peculiarities were detected. Thus, we can conclude that, after the lyophilization process, the studied fungal strains have kept their high viability and morphological, cultural and biosynthetic stability.

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