

Poster PS-6

Effect of Metal Nano-oxides on the Morphology and Biosynthesis of Protease in the *Trichoderma koningii* CNMN FD 15 and *Fusarium gibbosum* CNMN FD 12 Mycelial Fungi in Submerged Culture

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Mycelial fungi are organisms with a complex morphology that varies significant at different stages of life cycle, indifferent to the type of cultivation: solid state fermentation or submerged fermentation. Morphological structure of this organisms have a critical role in biotechnological processes, demonstrating a significant impact in the production of metabolites. A perspective approach in direction of the morphology and productivity of micromycetes in solid state culture is the supplementation of nano- and microparticles in the nutrient medium; this constituting the aim of presented research.

The possibility to use metal nano-oxides (MgO – 11.7 nm; ZnO – 10,2 nm, MgO/ZnO composite – 10.2/11.7 nm, TiO₂ – 30 nm, Fe₃O₄ – 30 nm, 65-70 nm) for induction of morphological changes was demonstrated on solid agar media of some fungi from genera *Trichoderma*, *Fusarium*, *Rhizopus*, producers of extracellular hydrolase.

The efficient utilization as seed material of the cultures resulted from the morphological modified colonies under the influence of nanoparticles was revealed. The utilization of modified colonies under influence of ZnO (30 nm) and Fe₃O₄ (65-70 nm) nano-oxides as seed material showed the increase of the synthesis of proteolytic enzymes by 19.2%, 192.6% and 12.9% for acid,

neutral and alkaline protease in *Trichoderma koningii* CNMN FD 15 strain, and – by 17.7% and 48.1% for acid and neutral protease respectively in *Fusarium gibbosum* CNMN FD 12 strain.

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