Poster Presentation 1

P1-45

Physiology of White Rot Fungus *Trametes polyzona* on Ligninolytic Enzyme Production and Enzymatic Capability in Deactivation of Pharmaceutical Products

Piyangkun Lueangjaroenkit[1)], Churapa Teerapatsakul[1)], Kazuo Sakka[2)], Makiko Sakka[2)], Tetsuya Kimura[2)], Emi Kunitake[2)], Lerluck Chitradon[1)]

[1)]Department of Microbiology, Faculty of Science, Kasetsart University, Thailand
[2)]Graduate school of Bioresources, Mie University, Japan

Purpose: Diverse effect on *Trametes polyzona* physiology, focusing ligninolytic enzyme productivity was directed by the fungal morphology as pellet or mycelial clump that occurred under different culture conditions. Ligninolytic enzymes of the fungus promising for deactivation of pharmaceutical products.
Methods: Cultivation of a white rot fungi in various submerge condition was done to manage its growth to become mycelial clump or pellet of different sizes. Productivity of ligninolytic enzymes of each fungal form was investigated. Efficiency of the enzymes on pharmaceutical product deactivation was evaluated. The fungus was identified based on morphological and molecular genetic characteristics.
Results: The fungus was identified as *Trametes polyzona*. Aeration and fungal morphology were important factor for the strain to produce ligninolytic enzymes, manganese peroxidase and laccase. Different cultivation methods influenced the fungal growth to obtain different morphology as mycelial clump or pellet. Amount of inoculum affected on pellet size, porosity and chlamydospore-like structure formation. Biomass increased with increasing amount of inoculum while pellet diameter decreased, resulted decreasing in porosity. Either clump/pellet form or pellet morphology of which size, porosity and formation of chlamydospore-like structure significantly impacted on *Trametes polyzona* productivity of ligninolytic enzymes. The enzymes effectively deactivated pharmaceutical products in tetracycline, β-lactam, and quinolone classes.
Conclusion: *Trametes polyzona* ligninolytic enzymes capable of deactivated pharmaceutical products. Cultivation methods affected *Trametes polyzona* to obtain diverse morphology of either mycelial clump, pellet of different sizes and porosity or formation of chlamydospore-like structure. The fungal morphology and aeration conducted the fungal physiology on ligninolytic enzyme productivity.