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Modelling the Biomass Growth and Enzyme Secretion by the White Rot Fungus *Phanerochaete Chrysosporium* in Presence of A Toxic Pollutant

PDF (Size: 648KB) PP. 114-119 DOI : 10.4236/jep.2012.31014

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ABSTRACT

The white rot fungus *Phanerochaete chrysosporium* is well known for its ability to degrade toxic pollutants owing to its efficient extracellular ligninase system. However, biomass growth and enzyme secretion in presence of toxic pollutant is not well understood. In the present study, using the model azo dye Direct Red-80, biomass growth and lignin peroxidase secretion by the fungus was studied during its degradation and a stochastic based model was applied to simulate the behavior of the fungus. Also, glucose concentration in the medium was varied in order to observe its effect on the dye degradation. Results revealed that glucose at an optimum concentration of 10 gL⁻¹ is essential for biomass growth, LiP secretion, as well as the dye decolourization. Modeling the behavior of the fungus with the presence of both glucose and dye has shown significant similarity.

KEYWORDS

 Toxic Pollutant; *Phanerochaete Chrysosporium*; DR-80; Dye Decolourization; Stochastic Model; Lignin Peroxidase

Cite this paper

K. Sen, K. Pakshirajan and S. Santra, "Modelling the Biomass Growth and Enzyme Secretion by the White Rot Fungus *Phanerochaete Chrysosporium* in Presence of A Toxic Pollutant," *Journal of Environmental Protection*, Vol. 3 No. 1, 2012, pp. 114-119. doi: 10.4236/jep.2012.31014.

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