

## Screening of Potential Laccase Producing White Rot Fungi by Using Solid and Liquid Culture and Zymogram Technique

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### Abstract

White rot fungi are important source of lignocellulytic enzymes. It has capability to produce both extracellular and intracellular laccases, which fungi are available and successfully cultivated in Bangladesh. This experiment was conducted to identify the laccase producing white rot fungi and a screening program has been designed for the selection of potential laccase bearing fungi. Mycelial culture of six different white rot fungi viz. *Pleurotus ostreatus*, *Pleurotus sajor-caju*, *Pleurotus djamor* and *Calocybe indica*, *Phaenerochaete chrysosporium* JBH 01 and *Phanerochaete chrysosporium* JBH 02 were used for screening program. All the fungi grown on Poly-R solid media were identified as potential white rot fungi but *Pleurotus ostreatus* was found as the highly potential and which had the ability to change rapidly the red colour of Poly-R to yellow, indicating their ligninolytic capability and laccase production ability. This was confirmed by the oxidation of Guaiacol which was seen as the reddish brown coloured zone around the colony indicating the laccase producing capability. Poly-R decolourization in liquid media was also quantified by reading the spectrum of computer-controlled UV- spectrophotometer. Maximum Poly-R degradation rate was found for *Pleurotus ostreatus*. Laccase enzyme was further confirmed by performing the Zymogram technique where green coloured bands were visualized in ABTS treated gel and reddish-brown bands were developed in Guaiacol treated gel. Results suggested that the maximum laccase activity was found in *Pleurotus ostreatus* which was 180.55 IU/ml followed by 160.56 IU/ml for *Pleurotus sajor-caju*. This result is also compatible with that of the screening program. Therefore, *Pleurotus ostreatus* was selected for further experiments of laccase purification.

**Keywords:** Laccase, Poly R, Screening, White rot fungi, Zymogram

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