

ABSTRACT

The present study was conducted on biosynthesis of laccase enzyme by *Botrytis cinerea* using rice husk as a substrate in submerged fermentation process. The effects of various parameters were checked on the production of laccase enzyme such as effect of various concentration level of rice husk, various carbon and nitrogen sources, various concentration levels of KH_2PO_4 , CaCl_2 , tryptophan, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, ZnSO_4 and $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ were observed on the production of laccase enzyme. Effects of process parameters such as pH, temperature, incubation period and inoculum size were also observed. The results indicated that 25g rice husk per 100 ml of distilled water, 6g tryptophan per 100 ml of distilled water, 6g K_2HPO_4 per 100 ml of distilled water, 2g CaCl_2 per 100 ml of distilled water, 2g of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ per 100 ml of distilled water, 1g of ZnSO_4 per 100 ml of distilled water and 1.5g MgSO_4 per 100 ml of distilled water gave the maximum production of laccase enzyme. The maximum laccase production was observed using Maltose as carbon source and Yeast extract as nitrogen source. The maximum laccase production was observed when fermentation medium of pH 5.0 was incubated at 25°C for 5 days with all the optimized culture medium ingredients. Maximum laccase production was observed in fermentation medium containing 20 ml/100ml of inoculation medium. The yield of laccase from *Botrytis cinerea* appeared as the potential source for upscaling the sustainable process through which laccase can be used in food processing, bioremediation and in various biotechnological applications.