Effects And Optimization Of Selected Operating Variables On Laccase Production From *Pycnoporus Sanguineus* In Stirred Tank Reactor.

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Abstract

The effects of selected variables in the production of laccase by *Pycnoporus sanguineus* using 2 L stirred tank reactor were investigated. Three operating variables namely agitation rate, aeration rate and pH were studied and optimized for maximum enzyme production. Screening experiments of the three variables were done using 2 level full factorial design (FFD). Analysis on factorial screening indicated laccase production was significantly influenced by agitation rate and pH and not aeration rate. The effect of agitation and pH were further optimized using face centered central composite (FCCCD) with fixed aeration rate. The initial factorial screening was augmented with new experiments in order to produce face-centered design for the optimization. Statistical analysis indicated the experimental data fitted well a quadratic model. Model validation was done through residual analysis. Maximum laccase production of 67.1 U L-1 was predicted and experimentally validated under the proposed optimum conditions.

KEYWORDS: laccase, pycnoporus sanguineus, stirred tank reactor, full factorial design, optimization, face centered central composite design

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