

ABSTRACT

Strategies for Improving Hydrolytic Efficiency of Crude Multienzyme Extracts in Mushroom Processing

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The current study investigated and optimized key process parameters affecting mushroom hydrolysis with crude enzymatic extract. The crude enzyme was prepared by solid-state fermentation of pineapple peels using *Aspergillus niger*. The reaction parameters viz. time, temperature, pH and enzyme concentration were optimized using the central composite design of the response surface methodology. The model predicted glucose yield of 1.49 mg/mL at optimal pH of 6.5, temperature of 50 °C, enzyme loading of 5 % (v/v), and reaction time of 12 h. Mushroom hydrolysis at the same optimal model conditions, increased glucose yield by 10%. More so supplementing SSF media with 0.2% (w/v) Tween-80 and 0.08% (w/v) yeast extract at moisture level of 70–75% significantly (p value < 0.05) improved hydrolytic efficiency of the crude enzyme extract by 2.2-fold. This study provides baseline data that will be useful in developing a low-cost enzyme-based process for hydrolyzing mushrooms to recover high-value products.

KEY WORDS: Bioprocessing, Crude enzymes, Mushrooms, Response surface methodology

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