Optimization of protein enrichment of fruit peels by mixed culture of Phanerochaete chrysoporum and Schizophyllum commune as animal feed supplement

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Abstract

Optimization of the process conditions of mixed culture of bacilliomycect fungi for improved protein enrichment of fruit peels is necessary to ease replication and scale-up processes. Simultaneous fermentation period and temperature of 12°C were optimum for elevated protein synthesis and enzyme activities (86.99 units/ml for a-amylase and 0.36 units/ml for cellulase). A highly significant quadratic model obtained from Face Centered Central Composite Design (FCCCD) described the process optimization. Linear effect of pH and inoculum size were significant (p < 0.05) while pH and moisture content (MC) interact significantly. 78.26% MC, pH 5.4 and 6.13% inoculum were the optimum level for a maximum crude protein synthesis of 130.77 mg/g. The crude protein contained essential and non-essential amino acid at a comparable level with other bioprocessed materials that are currently used as animal feed supplement. © All Rights Reserved.

Author keywords

Amino acid Bacilliomycect Fermentation Optimization Process conditions

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