

Bioconversion of Cassava Roots to High Protein Product for Animal Feed

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This study was aimed at producing protein-enriched animal feed from cassava roots by the conversion of cassava using amylase-producing fungi. Mold and yeast which produce amylase were isolated from cassava wastes, khao-mak and various mold-brans (look-pang). It was found that the filamentous fungi strain no. SUT1 which most likely belongs to the genus Chlamydomucor was proved to be the best amylase producing strain. This fungi exhibited highest amylase activities at 2.32 units. Pretreatment of cassava was done by steaming and non-steaming. The cassava fermentation was conducted in solid state using urea as the nitrogen source. Under room temperature and uncontrolled pH, which stands commonly at between pH 5-7, steamed cassava was saccharified better than non-steamed cassava. Reducing sugars were obtained at 680.07 mg/g from steamed raw cassava after 5 days of fermentation when using inoculum in the form of look-pang. Then dry inoculum of mixed culture between Chlamydomucor SUT1 and Candida utilis was developed, it was found that the bacterial contamination was reduced in 5 log. The protein content from this fermentation condition which was amended with 1.0% urea was reached maximum at 18.3%. To reduce the production cost, non aseptic solid-state fermentation in size of 540-L was recommended. After preliminary test, protein content could be obtained at 15.3% with composed of 11% amino nitrogen that was high enough to use for animal feed in further.

Keywords : Cassava, solid state fermentation, look-pang, khao-mak, protein-enriched feed