

Porndaran Junlakun 2010: Development of Culture media from Hom Mali Brown Rice Flour for Fungi. Doctor of Philosophy (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Associate Professor Vichai Haruthaithanasan, M.S. 228 pages.

The aim of this study was to use broken Hom Mali Brown Rice (HMBR) as raw material for producing culture media in order to reduce cost and imported media. The objectives of this research were 1) to study the process to produce Hom Mali Brown Rice Flour (HMBRF) extract powder 2) to develop the culture media formula with liquid and solid media for fungi growth and 3) to study the consumer acceptance test and to utilize in mushroom farm. The process of HMBRF extract powder production consisted of 1) the process to prepared HMBRF extract; the optimum conditions for HMBRF extraction were mixing HMBRF with distilled water (1:3.7), adding α - amylase 0.05 %w/v of HMBRF, digesting for 30 min at 75°C in water bath then cooling down rapidly in ice bath, boiling for 10 min to stop enzyme activity and separating supernatant by centrifuge at 5,000 rpm for 30 min. HMBRF extract liquid contained total soluble solids (TSS) 16.80%. Then HMBRF extract powder was prepared by spray drying at 160°C and 90°C for inlet and outlet temperature, respectively. HMBRF extract powder contained moisture content 2.49%, a_w 0.18, reducing sugar 3.45%, total sugar 31.99%, water absorption index 0.11 g/g and water solubility index 81.75%. Media formula was developed by using HMBRF extract powder and tested growth of fungi compared with commercial media. The optimum formula of HMBRF extract powder as liquid media for *A. niger* and *S. cerevisiae* growth were HMBRF extract powder 75 g for 1 liter water, the growth of both microorganism was similar to the control media (PDB, Difco). The solid media were the mixture of HMBRF extract powder with agar in the ratio of 5: 1. Solid media prepared by using mixed powder 50 g/ 1 liter water demonstrated the growth of *A. niger*, *S. cerevisiae* and *P. sorja-caju* similar to the control media (PDA, Difco). Consumer acceptance test with 30 respondents whose regular user found that they liked product moderately (7.43). All consumers accepted and more than 68% decided to purchase. The utilization of culture media in mushroom farm with 2 farms showed that all users accepted product because of lower cost and more convenience. Results from the research revealed that there potential to used broken HMBR as raw material for producing culture media which the growth of fungi were similar to the imported product and all consumer accepted product. Moreover, cost of the culture media from HMBRF for fungi was less expensive since it produced from local raw material (broken Hom Mali Brown Rice).

Student's signature

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