

PORCHAI LIMPHANUDOM : HIGH PROTEIN SNACK FOODS PRODUCTION BY EXTRUSION PROCESS. THESIS ADVISOR : ASSO. PROF. CHAIYUTE THUNPITHAYAKUL, Ph.D., THESIS COADVISOR : ASSIST. PROF. SURAPONG NAVANKASATTUSAS, Ph.D., 113 PP.

The main objective of this research is to produce a high protein snack food by extrusion process. First, the effects of variables involved viz. kind of main ingredients; rice and glutinous rice, screw compression ratio; 4:1 and 5:1, raw material moisture content; 12%, 14% and 16% were studied. From the experiments, it was shown that the higher the raw material moisture content, the higher will be the bulk density and moisture content of the extrudate, whereas lower expansion ratios of the extrudate were obtained. The findings were the same for both rice and glutinous rice. The use of different screw compression ratios did not affect the expansion ratio of extrudate for both main ingredients. The selected appropriate condition to produce high protein snack foods in the next experiment was: screw compression ratio 4:1 and 12% raw material moisture. High protein snack foods were produced using rice and glutinous rice as based ingredients while protein enriching sources were based on dehulled mungbean, DFSF and FFSF. It was found that dehulled mungbean could be fortified in rice and glutinous rice up to 45%; the extrudate still had good expansion property and general appearance. Similarly, DFSF could be fortified in both based ingredients up to a level of 20%. FFSF, on the other hand, could be added to glutinous rice only at 10% level whereas it was not possible to obtain acceptable product when fortified in rice. After that, the extrudate was flavored. The protein content of the flavored extrudate was 9.96-12.82%. The high protein snack food products were packaged in OPP/PE plastic and aluminium bags under atmospheric condition. The storage results revealed that average overall acceptability score and moisture content of the products in aluminium foil bags were rather constant during 2 months in storage. However, more severe changes were observed in the products in OPP/PE; average scores in flavor, crispness and overall acceptability were markedly decreased while the average color score decreased only slightly. The general appearance, on the contrary, stayed rather constant throughout the storage time.