The effects of extrusion conditions on the properties of Amplang, a traditional fish snack in Borneo

ABSTRACT

The effects of extrusion process parameters on Amplang fish snack production are investigated in this study using a single-screw extrusion machine. The extrusion parameters are based on two factors, namely the barrel temperature (100 - 140oC) and screw speed (146 - 208 rpm). The central composite design (CCD) is used to produce thirteen experimental combinations and the effects of the extrusion parameters on the physical and functional characteristics (hardness, bulk density, expansion ratio, and water absorption and solubility indexes) of the Amplang fish extrudate were assessed as responses. The fish extrudates investigated in this study varied between 45.57 - 246.33 N (hardness), 0.09 - 0.21 g/cm3 (bulk density), 1.00 - 2.67 (expansion ratio), 2.58 - 4.01 g/g (water absorption index), and 19.25 - 29.8% (water solubility index). The bulk density, expansion ratio, water absorption index, and water solubility index were shown to be significantly ($P < 0.05$) affected by the barrel temperature and screw speed. In conclusion, barrel temperature and screw speed can influence the physical and functional properties of extruded fish snacks and the extrusion technique demonstrated in this study can be utilised to produce Amplang fish snacks in Sabah.