ABSTRACT

This study evaluated the effects of extrusion process parameters and blends of chia seed and cassava flours on the nutritional and functional properties of flour blends aiming at improving the nutritive quality of cassava flour and enhancing the use of cassava in the production of extruded products. Extrusion was carried out using a single-screw extruder with constant parameters; screw compression ratio (3:1); die shape (round), die diameter (10 mm), pitch angel 45° screw, screw speed (100 rpm), and feed rate (35 rpm). The effect of feed moisture and amount of chia seed on the proximate composition, and physical and functional properties was determined using standard methods. The protein, fat and ash contents significantly ($p < 0.05$) increased from 2.39 to 12.23%, 0.79–11.77%, and 2.59–4.04%, respectively, with increasing chia seed incorporation. Increase in chia seed incorporation significantly ($p < 0.05$) increased Bulk Density (BD) of cassava from 0.45 to 0.63g/cm^3 for 60% chia seed substitution ratio and 15% moisture conditioning and the Water Absorption Index (WAI) of cassava from 1.53 to 5.94% for 20% chia seed incorporation and 20% moisture conditioning, while reducing significantly the Water Solubility Index (WSI) from 55.48 to 17.48 g/g for 60% chia seed incorporation and 20% moisture conditioning. On the other hand, solubility and swelling power of the extruded flour blends varied in no particular direction with chia seed incorporation and feed moisture conditioning. The cassava-chia seeds blends exhibited potential for the production of nutritive extruded instant porridge flour (extrudate was milled to flour) with good physical and functional properties.