
EFFECTS OF ISOLATION CONDITIONS ON THE FUNCTIONAL PROPERTIES OF AFRICAN YAM BEAN (*SPHENOSTYLIS STENOCARPA* HOCHST. EX A. RICH.) PROTEINS

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ABSTRACT

African yam bean (*Sphenostylis stenocarpa*) calcium proteinates and isoelectric proteins were characterized to determine their molecular constitution and functional properties. The electrophoretogram of *S. stenocarpa* proteins obtained from sodium dodecyl sulfate polyacrylamide gel electrophoresis under reducing condition showed that both calcium proteinates and isoelectric proteins had three prominent molecular mass, i.e., 29, 43 and 53 kDa. Calcium precipitation of the protein had a blueshift effect on the protein UV absorption with a shift from 269 nm to 257 nm, whereas UV absorption maximum for isoelectric precipitated protein remained 269 nm as obtainable with flour protein and, thus, no conformational change was associated with isoelectric precipitation. Bulk densities, water and oil absorption capacities of the isolates were in the ranges of 0.76–0.86 g/mL, 2.0–2.33 g/g protein and 0.78–0.99 g/g protein, respectively. Its gelation and water absorption properties were better than or comparable to those of soy bean and some other legumes.

PRACTICAL APPLICATIONS

African yam bean (*Sphenostylis stenocarpa*) is a crop grown in some countries in Africa. It produces its edibles (seed grains, root and leaves) in abundance and seems capable of delivering record quantities of protein from soils normally considered marginal. Moreover, the protein is of good nutritional quality. Production of protein isolates from this crop for food formulation and new product development is being envisaged. Its functional attributes examined under this study showed that it might be put to similar use in the food industry as obtainable with soy bean, where high gelling property is of interest in the formulation of value-added food products.
