

Effect of Cooking Time, Seed-To-Water Ratio and Soaking Time on the Proximate Composition and Functional Properties of Tetracarpidium conophorum (Nigerian Walnut) Seeds

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Abstract : This study investigated the effects of cooking time, seed-to-water ratio and soaking time on proximate and functional properties of African walnut seed using Box-Behnken design and Response Surface Methodology (BBD-RSM) with a view to increase its utilization in the food industry. African walnut seeds were sorted washed, soaked, cooked, dehulled, sliced, dried and milled. Proximate analysis and functional properties of the samples were evaluated using standard procedures. Data obtained were analyzed using descriptive and inferential statistics. Quadratic models were obtained to predict the proximate and functional qualities as a function of cooking time, seed-to-water ratio and soaking time. The results showed that the crude protein ranged between 11.80% and 23.50%, moisture content ranged between 1.00% and 4.66%, ash content ranged between 3.35% and 5.25%, crude fibre ranged from 0.10% to 7.25% and carbohydrate ranged from 1.22% to 29.35%. The functional properties showed that soluble protein ranged from 16.26% to 42.96%, viscosity ranged from 23.43 mPas to 57 mPas, emulsifying capacity ranged from 17.14% to 39.43% and water absorption capacity ranged from 232% to 297%. An increase in the volume of water used during cooking resulted in loss of water soluble protein through leaching, the length of soaking time and the moisture content of the dried product are inversely related, ash content is inversely related to the cooking time and amount of water used, extraction of fat is enhanced by increase in soaking time while increase in cooking and soaking times result into decrease in fibre content. The results obtained indicated that African walnut could be used in several food formulations as protein supplement and binder.

Keywords : African walnut, functional properties, proximate analysis, response surface methodology

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