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Key Words: Antioxidants, Free radicals, Metabolic disorders, , Oxidative stress, Spices

FNA 9 Effect of Boiling on the Digestibility of the Starches in 2 Varieties of Cocoyam

(Colocassia esculenta and Xanthosoma sagitofollium), their Polyphenol

Contents and Alpha Amylase Inhibitory Properties

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There are contradictory reports in literature on the relevance of taro corms (Colocassia esculenta) in glycemic control. Furthermore, information on the effect of boiling on the digestibility of the starches in Xanthosoma sagitofollium tubers is lacking in literature. Hence this study which investigated the effect of boiling on the digestibility of the starches in 2 varieties of cocoyam (Colocassia esculenta and Xanthosoma sagitofollium), their polyphenol contents and in vitro α-amylase inhibitory properties. The total starch (TS), resistant starch (RS), rapidly digestible starch (RDS), α-amylase inhibitory actions, total phenol and flavonoid contents of the raw and boiled tubers were determined using standard techniques. Digestible starch (DS) was measured as the difference between TS and RS. The TS contents of the raw and boiled tubers ranged from 25.3 to 35.6 g/100 g; RS ranged from 9.7 to 20.9 g/100 g; DS ranged from 35.89 to 71.38% (of total starch) while RDS ranged from 5.37 to 10.43 g/100 g. The raw tubers contained considerable amounts of phenols and flavonoids and boiling of the tubers retained their phenol and flavonoid contents. The aqueous extracts of the raw and boiled tubers demonstrated considerable α-amylase inhibition properties (32.45 to 46.62% over a concentration range of 10 to 50 mg/ml) under in vitro conditions but which were lower than that of the standard antidiabetic drug- acarbose that had 69.08% inhibition of α-amylase activity over a range of concentration of 2 to 10 mg/ml. The study showed that the raw and boiled forms of Colocasia esculenta and Xanthosoma sagitofollium had low digestibility of their starches and exerted considerable inhibition of alpha amylase activity under in vitro conditions which suggests the potential usefulness of the boiled forms of these cocoyam varieties as functional foods for people with type 2 diabetes mellitus.

Key words: Type 2 diabetes; Starch digestibility; Starch blockers, Diet, Nutrition

FNA 10 Effect of parboiling and storage on Nutritional Indices of Vigna Sesquipedalis Seeds

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This work investigated the effects of parboiling and storage on the nutritional indices of *Vigna sesquipedalis*. The prepared samples were analyzed for various nutritional components including proximate composition, mineral content, vitamin content, and amino acid profile. The phytochemical composition and antioxidant enzyme activity were also determined. The samples were prepared in four categories as fresh, described by AOAC such as Kjeldahl, soxhlet, distillation and digestion processes; vitamins and phytochemicals were assayed using standard colorimetric and titration methods; minerals were analyzed by analyzer while antioxidant enzymes were determined by spectrophotometry. The peak value (mg/100g) for in the fresh parboiled sample. In the same order, for the four the peak and lowest values for saponins, tannins, phytate, cardiac glycosides, haemagglutinin, cyanogenic glycosides, and trypsin inhibitor were 408 ± 0.04

and 228 ± 0.11 , 1345 ± 0.07 and 1035 ± 0.07 , 400 ± 0.08 and 150.50 ± 0.16 , 655 ± 0.07 and 410 ± 0.14 , 0.45 ± 0.07 and 410 ± 0.30 and 410 ± 0.14 , 410 ± 0.14 , 410and 228 ± 0.77 , 0.02, 0.61 ± 0.30 and 0.46 ± 0.56 , 45.60 ± 1.69 and 11.60 ± 1.69 , respectively. The proximate (%) for all four experiments revealed moisture content between 9.75 ± 3.46 and 16.39 ± 2.84 ; ash content between 2.60 ± 0.14 and 15.10 ± 0.28 ; fat content between 2.20 ± 0.14 and 16.39 ± 2.84 ; ash content between 2.60 ± 0.14 and 15.10 ± 0.28 ; fat content between 3.30 ± 0.14 and 6.35 ± 0.07 ; fibre content between 2.70 ± 1.98 ; protein content between 2.05 ± 0.14 and 6.35 ± 0.07 ; fibre content between between 2.00 and 2.70 \pm 1.98; protein content between 3.85 \pm 0.49 and 8.23 \pm 0.25; carbohydrate between 1.20 \pm 0.00 and 2.70 \pm 3.04. The results also about 1.20 \pm 0.49 and 8.23 \pm 0.25; carbohydrate between 1.20 ± 0.00 and 68.62 ± 3.94 . The results also showed vitamins C and B₆ in very significant concentrations, with vitamin C (mg/100g) ranging between 103.32 ± 0.02 and 139.31 ± 0.71 ; vitamin B₆(mg/100g) ranging between 117.50 \pm 3.54 and 233.75 \pm 1.77, respectively for all four experimental schedules. Zinc, calcium and magnesium were present in all four experiments in increasing order, with zinc (mg/100g) ranging from 0.615 ± 0.000 in stored parboiled to 1.238 ± 0.031 in the fresh sample; calcium (mg/100g) ranging between 1.576 ± 0.157 in stored sample and 2.178 ± 0.297 in fresh parboiled sample; magnesium ranging between 150.50 ± 0.16 in stored sample and 400.00 ± 0.08 in fresh parboiled/stored parboiled, respectively. The amino acid profile performed on the fresh and fresh parboiled samples showed that 18 of the twenty protein amino acids were all quantitatively present, with tryptophan (g/100g) having the lowest value of 1.115 for fresh sample and 1.143 for fresh parboiled sample and glutamic acid showing a peak value (g/100g) of 14.465 and 14.344 for both samples, respectively. The antioxidant enzyme assay performed on the fresh sample gave the activities (µmol min) as 54.97 ± 0.04 , 25.17 ± 1.43 , and 0.28 ± 0.02 , for catalase, glutathione peroxidase, and superoxide dismutase, respectively. The results reveal that Vigna sesquipedalis seeds are rich in a variety of essential nutrients and that nutrient status are not significantly affected by parboiling and storage.

Keywords: Asparagus bean, essential amino acids, parboiling, nutritional indices, phytochemical.

FNA 11 Amino Acid Profiles, Concentrations of Phyate, Oxalate, Calcium, Magnesium, Iron, Zinc and their Estimated Mole Ratios of *Edempiri* and *Aho* Traditional Foods

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Aim: Amino acid profiles, concentrations of phyate, oxalate, calcium, magnesium, iron, zinc and their estimated mole ratios in Edempiri and Aho traditional foods

Materials and Methods: Edempiri and Aho traditional foods were prepared following their traditional methods of preparation with locally sourced materials. The prepared food samples were preserved and analyzed for their constituents using standard methods. Estimation of mole ratios of the food samples was done with standard formulas as noted by different authors.

Results: Important essential amino acids such as lysine (3.21±0.13 g/100g protein), histidine (15.28±1.03 g/100g protein), threonine (2.52±0.72 g/100g protein), and methionine (0.96±0.12 g/100g protein) were g/100g protein), threonine (2.52±0.72 g/100g protein), and methionine (0.86±0.13 g/100g protein) of Aho protein), threonine (2.27±0.10 g/100g protein), and methionine (0.86±0.13 g/100g protein) of Aho protein), threonine (2.27±0.10 g/100g protein), and methionine (0.86±0.13 g/100g protein) of Aho protein), threonine (2.27±0.10 g/100g protein), and methionine (0.86±0.13 g/100g protein) of Aho protein), threonine (2.27±0.10 g/100g protein), and methionine (0.86±0.13 g/100g protein) of Aho protein), threonine (2.27±0.10 g/100g protein), and methionine (0.86±0.13 g/100g protein) of Aho protein), threonine (2.27±0.10 g/100g protein), and methionine (0.86±0.13 g/100g protein) of Aho protein), threonine (2.27±0.10 g/100g protein), and methionine (0.86±0.13 g/100g protein), histidine (1.55±0.34 g/100g protein), and methionine (0.86±0.13 g/100g protein), and methionine (0.86±0.13 g/100g protein), histidine (1.55±0.34 g/100g protein), histidine (1.55±0.34 g/100g protein), and methionine (0.86±0.13 g/100g protein), histidine (1.55±0.34 g/100g protein), histidine (1.52±0.14 g/100g protein), histidine (1.52±0.14 g/100g protein), histidin