

DEVELOPMENT OF INSTANT PUDDING MIX USING *Pentadesma butyracea* (AFRICAN BUTTERNUT) SEED CAKE AND EVALUATION OF BIOACTIVITY AND SHELF LIFE

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The African butternut tree, *Pentadesma butyracea*, is growing in National Botanical Garden in Peradeniya, Sri Lanka, produces edible fruits. The seeds are used to extract butter (30-50 %) and the remaining seed cake is not utilized. One tree yields \approx 200 kg of fruits during season and due to unawareness of this tree so far limited products have been developed from butter and fruit pulp on a lab scale. This research aimed to analyze the proximate composition and antioxidant activity of the seed cake powder, which remains waste after fat extraction, to prepare instant pudding mix. Three formulations of instant pudding mix were made using 5 % seed cake powder, sugar, citric acid, and natural spice flavour as same and three different ratios of carrageenan: corn flour (formula -1, 5:30; formula -2, 10:25; and formula -3, 15:20). The 3 formulations were subjected to sensory evaluation by the trained sensory panel of ITI, collected data, analyzed according to rank sum analysis and formula 1 was significantly preferred ($p < 0.05$) better than formulas 2 and 3. Microbiological quality parameters (aerobic plate count, yeast and mold count and total coliforms) and physicochemical parameters [colour, firmness, pH and total soluble solids (TSS)] were evaluated for pudding mix. The proximate composition and antioxidant assay DPPH were conducted on the seed cake powder and selected instant pudding mix but FRAP and ORAC were evaluated for seed cake powder only. The pudding made had the colour (L-37.96 \pm 0.99, b-4.57 \pm 0.105 and a-10.04 \pm 0.23), pH (5.6 at 28 °C), firmness (0.57 \pm 0.03 N) and TSS (16 °Brix). The product was acceptable in terms of microbiological, physicochemical, and sensory quality up to two weeks of storage at 26 \pm 2 °C. According to the proximate analysis, seed cake powder and pudding mix had moisture, 5.28 \pm 0.04 % and 5.05 \pm 0.02 %; protein, 3.44 \pm 0.13 % and 0.46 \pm 0.11 %; fat, 29.84 \pm 0.36 % and 1.74 \pm 0.07 %; and total ash, 2.59 \pm 0.02 % and 0.40 \pm 0.01 % respectively. Total Phenolic Content (TPC) of seed cake powder and pudding mix was 14.42 \pm 1.714 mg Gallic acid equivalent (GAE)/g and 118.34 \pm 7.45 mg GAE/g, respectively. Total Flavonoid Content (TFC) of seed cake powder was 7.96 \pm 0.12 mg Quercetin equivalent/g; however, it was not detected in pudding mix. ORAC and FRAP values for seed cake powder were 71.53 \pm 2.17 mg Trolox equivalent (TE)/g and 31.04 \pm 2.78 mg TE/g, respectively. The DPPH radical scavenging activity of seed cake powder and pudding mix were 1.69 \pm 0.05 mg TE/g and 0.25 \pm 0.02 mg TE/g, respectively. This instant pudding mix can offer health benefits due to its high antioxidants creating a good market potential.

Keywords: antioxidants, proximate, formulations, seed cake, pudding mix