DEVELOPMENT OF *PENTADESMA BUTYRACEA* (AFRICAN BUTTERNUT) FRUIT SAUCE AND DETERMINATION OF ANTIOXIDANT ACTIVITIES

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Pentadesma butyracea is an oil yielding plant named as an African butternut tree. It is growing in Hunuwala Estate and National Botanical Gardens, Peradeniya, Sri Lanka. The seeds and fruits are highly nutritious and due to the unawareness of this plant in Sri Lanka, very few products have been developed on a lab scale. This study aimed to develop viable food products on an industrial scale. The fresh fruits were collected from the Hunuwala Estate, and the fruit pulp was used to make *Pentadesma* fruit sauce. The sauce was made using *P. butyracea* fruit pulp, sugar, salt, spices, ginger, vinegar, chilli powder, and a permitted preservative. Nutritional value and antioxidant activities were evaluated for both fruit pulp and fruit sauce and physicochemical parameters analyzed only for sauce. Antioxidants (total phenolic content-TPC; total flavonoid content-TFC) and antioxidant activities using different mechanisms (DPPH, ORAC and FRAP) were evaluated using the water extracts of the fruit pulp and sauce. Sensory evaluation was carried out by a trained sensory panel in Industrial Technology Institute (ITI) and the data analyzed according to rank sum analysis based on critical difference at α 0.05. The *Pentadesma* fruit sauce was accepted by the screened and trained sensory panel of ITI. The *Pentadesma* sauce resulted in pH (2.14 at 27 °C), moisture (71.4 ± 0.1 %), TSS (28 °Brix), water activity (0.96 ± 0.001), viscosity (3823 ± 32.53 cP at 26.4 °C), colour (L=32.16 ± 0.16; a=12.27 ± 0.13; b=18.08 ± 0.19) and titratable acidity (2.11 ± 0.01 %). The sauce contains protein (0.34 ± 0.001 %), ash (0.86 ± 0.002 %), fat (0.25 ± 0.01 %), fiber (3.9 ± 0.02 %) and carbohydrates (27.15 ± 0.03 %). The TPC and TFC of the fruit pulp were 1.79 ± 0.08 mg gallic acid equivalent (GAE)/g of pulp and 0.23 ± 0.01 mg quercetin equivalent (QE)/g of pulp. The DPPH, ORAC and FRAP were 1.03 ± 0.02 mg Trolox equivalent (TE)/g of pulp, 3.05 ± 0.88 mg TE/g of pulp and 2.43 ± 0.23 mg TE/g of pulp. The TPC and TFC value of sauce were 2.59 ± 0.01 mg GAE/g of sauce and 0.29 ± 0.004 mg QE/g of sauce. The DPPH value was 0.66 ± 0.06 mg TE/g of sauce. The product was stable for up to three weeks of storage (on-going study) at 26 ± 2 °C. This study suggests that *Pentadesma* fruit pulp could be used to develop nutritional and value-added fruit products as new products in the market.

Keywords: fruit sauce, quality parameters, antioxidants