

Physicochemical and Biological Properties of Palmyrah (*Borassus flabellifer*) Fruit Pulp Incorporated Non-Dairy Frozen Dessert

P. Rinoshan^{1*}, M.C.N. Jayasooriya¹, R. Pathmaraj², and S. Srivijeindran²

¹Department of Food Science and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka.

²Palmyrah Research Institute, Kaithady, Jaffna, Sri Lanka.

*prinoshan@std.appsc.sab.ac.lk

Palmyrah (*Borassus flabellifer* L) is a seasonal fruit palm found in the Northern and Eastern provinces of Sri Lanka; The sap of the Palmyrah tree has been used as an affordable beverage, but there have been fewer applications for the pulp as a food product, apart from its use in traditional sweets. Mechanization of the pulp processing has also been limited. The present study was carried out to determine the physicochemical, functional, and organoleptic properties of palmyra fruit pulp incorporated coconut milk-based non-dairy frozen vegan dessert which may also be a product suitable for lactose intolerant. The product is developed using the same procedure as ice cream making, but with different proportions of palmyrah fruit pulp and coconut milk. The highest sensory preference was received for the formulation with 60% of coconut milk and 20% of palmyra fruit pulp respectively. The proximate composition of moisture, crude-fat, crude-protein, and ash percentages were recorded as 68.73 ± 0.68 , 26.39 ± 0.21 , 0.99 ± 0.03 , and $0.06 \pm 0.02\%$ respectively; and physicochemical properties such as pH, brix⁰, titratable acidity, and overrun were recorded as 6.44 ± 0.01 , $26.87^0 \pm 0.12$, $0.30 \pm 0.02\%$, and $51.26 \pm 2.35\%$, respectively. A low melting rate, and viscosity were recorded as 0.271 g/min and 77.86 ± 1.16 mm²/s compared to the market sample of ice cream (1.096 g/min and 109.46 ± 1.16 mm²/s) respectively. The colour values of L*, a*, and b* were as 43.0 ± 19.5 , 2.28 ± 0.67 , and 18.39 ± 0.96 , respectively. The non-dairy frozen dessert has demonstrated strong antioxidant activity by possessing a total phenolic content of 0.52 ± 0.02 GAE mg/ml, and a DPPH-IC₅₀ value of 11.57 ± 2.39 mg/ml. During the period of study (15 weeks), coliforms were not detected and the total plate count was also within the acceptable limit. The physicochemical, and microbiological properties of the non-dairy frozen dessert have complied with the SLS standards of commercial ice creams. In conclusion, palmyra fruit pulp can be effectively incorporated into the coconut milk-based non-dairy frozen dessert by improving its functional and unique organoleptic properties such as taste, texture, appearance, and aroma.

Keywords: Coconut Milk, Frozen Dessert, Non-Dairy, Palmyra-Pulp, Vegan Dessert