

Development of a Herbal Ice cream using “Beheth Nelli” (*Phyllanthus emblica*) and “Iramusu” (*Hemidesmus indicus*) and Determination of its Quality Parameters

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Abstract

“Beheth Nelli” (*Phyllanthus emblica*) and “Iramusu” (*Hemidesmus indicus*) are underutilized herbal plants that have medicinal and therapeutic properties. Ice cream is generally treated as a junk food and a poor source of phytochemicals and anti-oxidants. The present study was carried out to develop a herbal ice cream to enhance the nutritional quality by incorporating “Nelli” and “Iramusu” extracts. Standard ice cream mix was formulated to contain 9.65% fat, 12.87% Solid-Non-Fat (SNF), 10% sugar, and 0.4% gelatin as a stabilizer. “Nelli” extracts were incorporated at the rate of 6, 8, 10, 12 % (w/w) of the ice cream mix while the “Iramusu” extract was added as a substitute to vanilla essence with a constant concentration of 0.4% (w/w) to all the mixes. Pumpkin seeds were also added to enhance organoleptic properties as a substitute to cashew. Sensory properties of the 6% “Nelli” extract incorporated ice cream showed significantly higher values compared to other treatments. Ice cream made with 6% “Nelli” extract had 9.48% fat, 11.48% Milk-Solid-Non-Fat (MSNF) and 4.37% proteins. The present study determined the physico-chemical properties during the storage period of 40 days at $-18 \pm 1^\circ\text{C}$. Parameters such as acidity (0.5-0.6 %), total solids (30.0-37.5 %), and specific gravity (1.08-1.21) of the ice cream increased significantly ($p < 0.05$) while pH (6.2-5.9), overrun (66.1-55.5 %), decreased significantly ($p < 0.05$). Protein, fiber and ash contents did not show any significant changes during storage. Storage caused significant changes ($p < 0.05$) on a^* (6.56 -10.18), where a^* value indicates changes in greenness to redness. First dripping time (6.55-17.15 min) increased while melting rate (84-70%) decreased significantly ($p < 0.05$). Microorganisms (Total plate count) were not detected in ice cream during the storage period of 40 days. The calorific value of the herbal ice cream was 170.76 kcal/100g. The developed ice cream can be introduced to the market as a novel value-added herbal ice cream with improved sensory properties.

Keywords: Ice cream, Herbal, Physico-chemical properties, Sensory properties, Storage

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