

Quality and Sensory Characteristics of Gelato Ice Cream Produced by Overripe Mango (*Mangifera Indica L.*)

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Structured Abstract

Background: In recent years, the gelato industry has experienced changes due to an increasing demand for unique flavour profiles and environmentally conscious production. Overripe fruits, which are usually thrown away because of their appearance or lower quality, present an opportunity to reduce waste and introduce distinctive sensory characteristics to gelato. The objectives of this research were to determine the physicochemical properties of overripe mango in gelato ice cream production including colour, pH, total phenolics content, antioxidant, mineral, total soluble solid, overrun, and viscosity and to evaluate the sensory characteristics of gelato at different percentage incorporation of overripe mango fruits.

Methods: In this study, the mangoes flesh was blended to make the overripe mango puree and the gelato ice cream incorporation of overripe mango puree at different percentages of overripe mango puree (0, 25, 50, 75 and 100%) was heated up, homogenised for 20 minutes at 8 rpm and inserted into hard ice cream machine for less than 15 minutes.

Results: Colour analysis revealed that mango puree darkened gelato coloration (decreasing L*) and shifted hue (increasing a* and b* values) with increasing mango content. pH levels increase with higher overripe mango puree percentage, likely influenced by mango acidity. Phenolic content increased significantly, indicating heightened antioxidant potential, however scavenging activity against free radicals varied, with higher overripe mango puree content showing reduced scavenging efficiency. Overrun values remained stable across formulations, indicating overripe mango puree had minimal impact on air incorporation during freezing. Gelato texture was perceived as creamier at moderate overripe mango puree levels. Sweetness levels remained high across formulations but slightly decrease with higher overripe mango content.

Conclusion: Overall, gelato formulations with overripe mango puree were well-received, demonstrating favourable consumer acceptance. Incorporating overripe mango puree into gelato enhances creaminess and sweetness while introducing variations in colour, antioxidant content, and sensory attributes.

Keywords: Gelato, Overripe Mango Puree, Sensory Characteristics

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