

**EVALUATION OF MELTING RATE,
PHYSICOCHEMICAL AND SENSORY PROPERTIES OF
ICE CREAM INCORPORATING PROCESSED GINGER**



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ABSTRACT

Ginger incorporated ice cream can be considered as a herbal ice cream and health food. Ginger and processed products are rich source of natural antioxidants as the bio active compounds, where it fortified the ice cream. Therefore, the aim of this present study was undertaken to develop different forms of the ginger ice cream like ginger juice, ginger paste and ginger syrup were analyzed for physicochemical, physical, microbial and sensory properties during frozen storage at -10°C . The physicochemical (total solid, moisture, ash, fat, titratable acidity, pH, total soluble solid, antioxidant), physical (first dripping time, melting rate, textural properties), microbial (total bacteria, *Staphylococcus aureus*, *E. coli.*, *Salmonella* spp.) and sensory characteristics (colour, taste, texture, flavor and overall acceptability) were analyzed, at day 1, week 1, week 2, week 3 and week 4 of storage.

Inclusion of the juice, syrup and paste reduced total solids, fat, acidity and total soluble solid, and increased antioxidant activity. Ash content increased with the ginger paste, whereas it decreased with the ginger juice and syrup. First dripping time amplified and melting rate declined with all the ginger preparations. And also textural properties increased and microbial activity decreased with ginger added ice creams. Further, all the processed ginger added ice creams achieved the highest overall acceptability scores than without ginger added ice cream.

The results of this study revealed that, the total solid ($37.62\pm 0.95\%$), fat ($8.87\pm 0.31\%$) and total soluble solid ($29.07\pm 0.95\%$) content were significantly ($p<0.05$) higher in without ginger incorporated ice cream. Titratable acidity ($0.27\pm 0.01\%$) content was significantly ($p<0.05$) higher in ice cream incorporated with ginger juice. pH was significantly higher in without ginger incorporated ice cream (6.59 ± 0.01). Ginger juice

incorporated ice cream showed the highest antioxidant activity (30.47 ± 0.78 mM/g) and least value (9.13 ± 0.31 mM/g) showed in without ginger incorporated ice cream. The first dripping time was significantly ($p < 0.05$) higher in ginger paste incorporated ice cream (14.02 ± 0.34 min) and lowest value showed in without ginger incorporated ice cream (6.36 ± 1.01 min). Hardness were significantly ($p < 0.05$) higher in ginger paste added ice cream and lowest in without ginger added ice cream. Moreover microbial activity was lower (1.2×10^3) in ginger syrup added ice cream. During storage, the total solid, ash, fat, total soluble solid content, dripping time and textural properties were significantly ($p < 0.05$) increased. pH content, antioxidant activity and melting rate were significantly ($p < 0.05$) decreased with the storage period. Organoleptic properties were evaluated though the panel of 30 members. As a results of organoleptic characteristics revealed that, 5% of ginger syrup incorporated ice cream had the highest mean score of overall quality of all sensorial properties namely, colour, taste, texture, aroma, and overall acceptability. Finally, it could be concluded that the processed ginger is enriching the ice cream manufacture and it is important to improvement of human nutrition.

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