Development of Ginger (*Zingiber officinale*) Incorporated Functional Milk Dessert

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Starter cultures and stabilizers play a key role in making a stable coagulum in yoghurt manufacture. Ginger has high antioxidant capacity and unique ginger protease (GP) enzyme activity which can coagulate milk by affecting on milk caseins. This study was carried out to develop a functional dairy dessert coagulated by ginger juice (GJ) without adding starter cultures. GJ was prepared by blending fresh ginger without adding water followed by filtering. Standardized cow milk added with 8% sugar and 2% full cream milk powder was heated at 100ºC for 5 min and divided into two batches. One batch was incorporated with 2% gelatin and the other was prepared without adding gelatin. Each mix was cooled to 60ºC, added with varying amounts of GJ (0, 1, 3, and 5 %) separately and incubated at 60ºC for 2h to provide optimum temperature of GP activity and stored at 4ºC. Antioxidant activity (AO), total phenolic content (TPC) and total soluble sugar of fresh GJ were evaluated using DPPH, Folin-Ciocalteu and Phenol sulfuric methods, respectively. AO, pH, texture and TPC of the products were analyzed at 0, 3, 6 and 9 days of storage at 4ºC. Texture profile was analyzed using a texture analyzer. Total plate count, Yeast and mold, *Escherichia coli* counts were enumerated to determine the shelf life of the product. Sensory evaluation was done using 9-point hedonic scale, utilizing 30 untrained panelists. Ginger 1% product with gelatin was selected as the best in sensory evaluation. The product incorporated with 3% ginger with gelatin showed a significantly higher AO activity (61.81±6.96). There is no significant difference in TPC among the desserts. Ginger added product without gelatin showed a significantly higher hardness (86.33±16.6%) compared to 0% GJ added sample revealing the coagulating effect of GJ. However, increasing ginger percentage did not significantly ($p>0.05$) increase the hardness of the product. GJ can be used as a milk coagulant agent while improving the human health.

Keywords: Antioxidant activity, Coagulant, Texture, Total phenolic content