

**THE EFFECTS ON SUBSTITUTING FRESH MILK WITH PASSION
FRUIT (*Passiflora edulis* var. *Edulis sims*) TOWARDS THE CHEMICAL
PHYSICAL, SENSORY, AND ANTIOXYDANT ACTIVITY
CHARACTERISTICS OF GELATO.**

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ABSTRACT

One of the most appealing types of milk processing is the manufacture of gelato. This research was aimed to understand the effects on substituting fresh milk with passion fruit extract towards the chemical physical, sensory, and antioxidant activity characteristics of gelato. Gelato was made with 3 treatments and 3 times repeatedly. Fresh milk substituted with passion fruit extract in gelato production had an ratio of 100: 0, 90:10, 80:20 (milk: passion fruit). The variables were overrun, melting point, total solids, pH, total fat, total sugar, antioxidant activity, color, taste, aroma, and texture of gelato. This research method analysis used variance analysis method (ANOVA) with a complete random design of unidirectional patterns followed by duncan test. Sensory properties were analyzed by Kruskal Wallis. The results of the research showed a significant differences ($P < 0.01$) for antioxidant activity, pH, total sugar, physical and sensory characteristics, and has significantly differences ($P < 0.05$) for gelato total fat. A gelato that substituted with passion fruit extract of 0, 10 and 20% concentrate had an *overrun* of $31,59 \pm 0,87\%$, $37,51 \pm 1,70\%$ and $35,42 \pm 0,61\%$, melting point of $44,46 \pm 0,49$ minutes, $48,56 \pm 0,50$ minutes and $50,66 \pm 1,50$ minutes, total solids $34,59 \pm 0,93\%$, $32,14 \pm 0,05\%$, $32,77 \pm 0,33\%$, pH $6,53 \pm 0,1$, $5,53 \pm 0,10$, $4,63 \pm 1,50$, total fat $5,18 \pm 0,22\%$, $5,52 \pm 0,53\%$, $4,39 \pm 0,12\%$, total sugar $13,56 \pm 0,20\%$, $13,79 \pm 0,98\%$, $11,25 \pm 0,59\%$, antioxidant activity of $20,48 \pm 1,44\%$, $22,06 \pm 1,47\%$, $11,76 \pm 1,48\%$, colour score $1,05 \pm 0,22$, $3,55 \pm 0,96$, $4,00 \pm 0,00$, flavour $2,00 \pm 0,00$, $2,80 \pm 0,89$, $3,75 \pm 0,64$, aroma $1,00 \pm 0,00$, $3,85 \pm 1,76$, $4,80 \pm 0,89$ and texture $3,70 \pm 0,73$, $1,35 \pm 0,75$, $1,15 \pm 0,37$. The result of the research showed that a gelato that substitute with purple passion fruit extract increased sensory characteristics, however it reduced quality of chemical-physical and antioxydant activity gelato. The good qualities were gelato without substitution and gelato with 10% substitution of passion fruit extract.

(keywords : Gelato, passion fruit extract, chemical-physical characteristic, Sensory characteristic, antioxidant activity)