THE EFFECTS OF FIGS AS SUGAR SUBSTITUTE ON PHYSICOCHEMICAL PROPERTIES OF SOYMILK ICE CREAM

by

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LIST OF ABBREVIATIONS

Abbreviation	Caption
ANOVA	Analysis of variance
AOAC	Association of Official Analytical Chemist
Eq.	Equation
GI	Glycemic index
h	Hour
min	Minute
SD	Standard deviation
T1	Soymilk ice cream with ratio of fig syrup to sucrose (0:10)
T2	Soymilk ice cream with ratio of fig syrup to sucrose (2:8)
T3	Soymilk ice cream with ratio of fig syrup to sucrose (5:5)
T4	Soymilk ice cream with ratio of fig syrup to sucrose (8:2)
T5	Soymilk ice cream with ratio of fig syrup to sucrose (10:0)
USDA	United States Department of Agriculture

KESAN PENGGUNAAN BUAH ARA SEBAGAI PENGGANTI GULA TERHADAP FIZIKOKIMIA AIS KRIM SOYA

ABSTRAK

Gula yang digunakan untuk memaniskan makanan dikaitkan dengan indeks glisemik tinggi dan sering disalahkan kerana menyumbang kepada kenaikan berat badan dan penyakit kronik seperti diabetes jenis 2 dan barah pankreas. Untuk mengatasi masalah ini, sirap ara yang diperoleh dari pengambilan buah ara digunakan sebagai pengganti gula dalam ais krim soya. Kajian ini dirancang untuk mengkaji kesan sirap ara sebagai pengganti gula terhadap sifat fizikokimia ais krim soya. Lima formula ais krim soya yang berbeza dengan nisbah sirap ara kepada sukrosa (0:10, 2: 8, 5: 5, 8: 2, dan 10: 0) dihasilkan. Protein, lemak, abu, keasidan yang dapat dititratkan, jumlah pepejal larut dan keamatan warna coklat gelap meningkat dengan ketara ($P < 0,05$) dengan peningkatan penggantian sirap buah ara. Kelembapan, karbohidrat, kegebuan dan nilai pH telah menurun dengan ketara ($P<0.05$) dengan peningkatan penggantian buah ara. Walau bagaimanapun, peratusan berlebihan ais krim soya yang dihasilkan dengan penggantian buah ara mencatatkan 32.96% masih lebih rendah berbanding dengan ais krim komersial yang disarankan, bermaksud ais krim susu soya yang dihasilkan mempunyai tekstur yang kurang halus. Kandungan protein dalam ais krim soya dengan jumlah buah ara yang tinggi mencatatkan 5.29% telah melepasi nilai yang disyorkan ais krim untuk dikategorikan sebagai ais krim berkualiti tinggi. Lebih lagi, warna aiskrim susu soya berubah menjadi warna coklat gelap ketika penggantian ara meningkat dan ara memberikan intensiti masam yang tinggi kerana pigmen karotenoid dan asid sitrik hadir ketika penggantian nisbah ara meningkat. Secara keseluruhan, buah ara boleh digunakan sebagai pengganti gula untuk memberi rasa manis dan meningkatkan sifat fizikokimia ais krim.

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ABSTRACT

Sugar that is used to sweeten food is associated with a high glycemic index and often blamed for contributing to weight gain and chronic diseases such as type 2 diabetes and pancreatic cancer. To address this issue, fig syrup obtained from the extraction of fig fruit was used as sugar substitution in the soymilk ice cream. This study was designed to examine the effects of fig syrup as a sugar substitute on the physicochemical properties of soymilk ice cream. Five different formulations of soymilk ice cream with different fig syrup to sucrose ratio (0:10, 2:8, 5:5, 8:2, and 10:0) were produced. The protein, fat, ash, titratable acidity, total soluble solid and intensity of dark brown colour were increased significantly ($P<0.05$) by the increased of fig syrup substitution. The moisture, carbohydrates, overrun and pH value has decreased significantly ($P<0.05$) with the increased of fig substitution. However, the overrun percentage of the soymilk ice cream produced with fig substitution recorded 32.96% is still lower compared to the recommended of commercial ice cream, means the soymilk ice cream produced have less smooth texture. The protein content in the soymilk ice cream with high amount of fig recorded 5.29% had surpassed the value recommended of the ice cream to be categorized as high quality ice cream. Moreover, the colour of the soy milk ice cream turned into darker brown colour as the fig substitution increased and the fig gave high sour intensity due to the carotenoids pigment and citric acid present respectively as the fig ratio substitution increase. Overall, fig could be used a sugar substitute to sweeten and enhance the ice cream properties.