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Karakteristik Fisikokimia, Sensoris dan Aktivitas Antioksida Es Krim dengan Tepung Kacang Bambara
(Vigna subterranea (L.) Verdc.) sebagai Substitusi Susu Skim
Nurul Fairuz Zahira, Prof. Dr. Ir. Nurliyani, M.S., IPM.
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KARAKTERISTIK FISIKOKIMIA, SENSORIS, DAN AKTIVITAS ANTIOKSIDAN ES KRIM DENGAN TEPUNG KACANG BAMBARA (*Vigna subterranea* (L.) Verdc.) SEBAGAI SUBSTITUSI SUSU SKIM

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh substitusi tepung kacang bambara pada susu skim terhadap kualitas fisik, kualitas kimia, aktivitas antioksidan, serta sifat sensoris es krim. Perlakuan yang digunakan yaitu tingkat substitusi tepung kacang bambara sebesar 0%, 25%, dan 50%. Parameter kualitas fisik yang diamati meliputi *overrun* dan waktu leleh, sedangkan kualitas kimia meliputi total padatan, kadar lemak, dan kadar protein. Aktivitas antioksidan dianalisis menggunakan metode DPPH *(2,2-diphenyl-1-picrylhydrazyl).* Pengujian sensoris dilakukan oleh 30 panelis dengan parameter warna, aroma, rasa, tekstur, dan *overall* menggunakan skala tingkat kesukaan. Setiap perlakuan dilakukan dengan tiga kali pengulangan. Data yang diperoleh dianalisis menggunakan One-Way ANOVA dan dilanjutkan dengan uji Duncan's Multiple Range Test (DMRT). Uji kualitas sensoris dianalisis menggunakan uji Kruskal-Wallis dan dilanjutkan dengan uji Mann-Whitney. Hasil penelitian menunjukkan bahwa substitusi tepung kacang bambara 0%, 25%, 50% memberikan pengaruh nyata terhadap *overrun* berturut-turut yaitu 71,75%; 59,98%; 41,77%; waktu leleh 28,64 menit; 37,65 menit; 44,75 menit; aktivitas antioksidan 20,15%; 27,43%; 33,04%; warna 5,97; 5,03; 5,17; sensoris rasa 6,00; 4,73; 4,40; *overall* 5,73; 5,00; 4,93. Substitusi tepung kacang bambara pada susu skim tidak memberikan pengaruh nyata terhadap kualitas kimia, aroma, dan tekstur. Peningkatan substitusi tepung kacang bambara meningkatkan aktivitas antioksidan dan waktu leleh, namun tidak memengaruhi kualitas kimia, aroma, dan tekstur es krim. Peningkatan substitusi tepung kacang bambara dapat menurunkan *overrun,* warna, rasa, dan sensoris.

Kata kunci: Es Krim, Tepung Kacang Bambara, Kualitas Fisikokimia, Aktivitas Antioksidan, Kualitas Sensoris.

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PHYSICOCHEMICAL, SENSORY, AND ANTIOXIDANT ACTIVITY CHARACTERISTICS OF ICE CREAM MADE WITH BAMBARA PEA FLOUR (*VIGNA SUBTERRANEA* (L.) VERDC.) AS A SKIM MILK SUBSTITUTE

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ABSTRACT

This study aimed to determine the effect of substituting skim milk with bambara groundnut flour on the physical quality, chemical quality, antioxidant activity, and sensory properties of ice cream. The treatments used were bambara groundnut flour substitution levels of 0%, 25%, and 50%. The physical quality parameters observed included overrun and melting time, while the chemical quality parameters included total solids, fat content, and protein content. Antioxidant activity was analyzed using the DPPH (2,2-diphenyl-1-picrylhydrazyl) method. Sensory testing was conducted by 30 panelists, who evaluated color, aroma, flavor, texture, and overall impression using a preference rating scale. Each treatment was repeated three times. The data obtained were analyzed using one-way ANOVA, followed by Duncan's Multiple Range Test (DMRT). Sensory quality tests were analyzed using the Kruskal-Wallis test, followed by the Mann-Whitney test. The results of the study showed that substituting 0%, 25%, and 50% bambara groundnut flour had a significant effect on overrun, which was 71,75%; 59,98%; and 41,77%; respectively; melting time was 28,64 minutes; 37,65 minutes; 44,75 minutes; respectively; antioxidant activity of 20,15%; 27,43%, and 33,04%; color of 5,97; 5,03; and 5,17; sensory taste of 6,00; 4,73; and 4,40; and overall score of 5,73; 5,00; 4,93. Replacing skim milk with bambara groundnut flour had no significant effect on the chemical quality, aroma, and texture. Increasing the substitution level of bambara groundnut flour increased antioxidant activity and melting time but did not affect the chemical quality, aroma, and texture of the ice cream. Increasing the substitution level of bambara groundnut flour can reduce overrun, color, flavor, and sensory qualities.

Keywords: Ice Cream, Bambara Groundnut Flour, Physicochemical Properties, Antioxidant Activity, Sensory Qualities.