

Revitalizing Chocolate Spreads: Development of a Chocolate Spread Incorporating Jackfruit (*Artocarpus heterophyllus*) Seed Flour

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This study investigates the incorporation of jackfruit seed flour (JFSF) into chocolate spread formulations to enhance nutritional quality and sustainability. *Artocarpus heterophyllus* Lam. is an underutilized fruit with significant yield potential. Jackfruit seeds were processed into flour and added to chocolate spreads in varying proportions: T0 (control), T1 (50% JFSF), T2 (75% JFSF), and T3 (100% JFSF). Sensory evaluations on taste, aroma, appearance, and overall acceptability favored T1. Key findings include a 48.25% yield of JFSF after processing. Compared to the control (T0), the T1 formulation exhibited lower moisture (34.86% vs. 39.56%), higher ash (3.817% vs. 3.049%), decreased fat (6.195% vs. 6.870%), and increased fiber content (1.0200% vs. 0.7900%). No significant differences ($p \leq 0.05$) were found in these parameters. Texture analysis showed T1 had lower hardness (290.00g) and higher adhesiveness (16.30 mJ), indicating better spreadability than T0. Total Soluble Solids (TSS) were lower in T1 (24.10°Brix) compared to T0 (26.2667°Brix, with a significant difference ($p \leq 0.05$)). Color attributes were significantly ($p \leq 0.05$) altered in T1, with higher CIELAB L*, a*, and b* values (31.533 ± 0.777 , 4.517 ± 0.287 , 5.450 ± 0.429) than T0 (27.313 ± 0.598 , 2.893 ± 0.215 , 2.350 ± 0.223). During two months of refrigerated storage, no changes in quality or sensory attributes were observed. In conclusion, incorporating 50% JFSF (T1) showed promising results in taste, texture, and overall acceptability of chocolate spreads. This suggests potential for developing sustainable and nutritious alternatives. Further optimization of formulations is recommended for consumer-oriented products. This research contributes to enhancing the nutritional profile and sustainability of chocolate spreads using JFSF.

Keywords: *Jackfruit seed flour, Chocolate spread, Storage life, Incorporation, Sensory attributes, CIELAB*

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