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Formulation and quality assessment of "Peanut-based" spread incorporated with Flax, Chia, and Sesame seeds

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Peanut butter is one of the most popular spreads in the world. There are many alternative plant seeds with greater nutritional and therapeutic potential that can be used to produce plant seeds-based butter. Therefore, the present study aimed to develop a Peanut-based spread enriched with Flax (FS), Chia (CS), and Sesame Seeds (SS) and evaluate its physicochemical, sensory, and functional properties. The spread was prepared using the various ratios of the above seeds while the control was 100% peanut seed. The physicochemical, DPPH radical scavenging and phenolic activities were determined using standard protocols. Sensory evaluation was conducted by 15 trained panelists on a 9-point hedonic scale. The sensory evaluation data demonstrated that 70% Peanut, 15% FS, 10% CS and 5% SS is the best ratio to develop a plant-based spread (OVA). In addition, the OVA sample showed significantly high ($P < 0.05$) crude fiber (63.63 ± 0.14%) and protein (24.20 ± 0. 10%) while fat (26.34 ± 0.10%) and ash (1.32 ± 0.04%) was lower than the control. The addition of FS, CS, and SS had significantly increased the alpha-linolenic acid content, total phenolic and antioxidant activities, and values were 5.16 ± 0. 06%, 2.66 ± 0.09 GAE mg/g, and 37.37 ± 0.78%, respectively. There was no change in the cohesiveness (0.11 ± 0.02), adhesiveness (1.1 ± 0.17 mJ), and chewiness (0.67 ± 0.11 mJ) of the OVA compared to control. Additionally, no microbial counts were detected in the 4-month refrigerated storage study. Therefore, this study demonstrated the feasibility of developing a peanut-based spread enriched with flax, chia, and sesame seeds, achieving desired sensory and textural quality, and enhancing its therapeutic potential.

Keywords: Alpha-Linolenic Acid content, Antioxidant activity, Functional foods Peanut based spread, Phenolic content

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