DEVELOPMENT OF VEGAN-FRIENDLY SWEET CORN (*Zea mays var. saccharata*) AND NAI-MIRIS BASED NUGGETS AS A VALUE ADDED SNACK PRODUCT

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ABSTRACT

The present study focused on the development of vegan-friendly sweet corn and nai-miris based nugget as a novel value-added snack product with ambient temperature storage stability. The research aimed to formulate a nutritionally balanced, sensory acceptable, and shelf stable vegan alternative to conventional meat-based nuggets through the incorporation of locally available plant-based ingredients. The formulated product underwent comprehensive physicochemical, sensory, proximate and accelerated shelf-life analyses to assess its overall quality and storage performance. Three formulations (T1, T2 and T3) were developed by varying the proportions of sweet corn paste, sweet corn chunks, ash plantain, rice flour and corn starch (T1-100:100:80:50:10; T2-150:80:60:30:15; T3-200:60:40:20:20) respectively. The best formulation was selected through sensory evaluation. Physicochemical evaluation revealed pH values ranging from 5.94±0.04 to 6.31±0.01, and Brix values increased significantly ($p < 0.05$) with higher sweet corn incorporation, from 9.6 ± 0.15% to 14.2 ± 0.03%, while moisture content varied between 49.7 ± 0.5%, and 52.9 ± 0.8%. Proximate analysis of the optimized formulation showed 7.46 ± 0.3% protein, 11.2 ± 0.25% fat, 2.94 ± 0.1% ash, 6.44 ± 0.4% fiber, 15.53 ± 0.19% carbohydrates, and an energy value of 192.89 ± 1.7 kcal/100 g, confirming the product's nutritional adequacy. Accelerated shelf-life testing at 25°C, 37°C, and 40°C, over four weeks demonstrated a gradual increase in moisture content with storage time. Microbial analysis confirmed the product's sterility during the initial two weeks. After opening, samples stored under refrigeration maintained excellent microbial and sensory stability (Due to N/D results) in all 4 microbiological analyses, up to five days, with only a minor decrease in aroma. Overall, the findings establish that the developed vegan nugget is nutritionally rich, microbiologically safe, and acceptable for ambient storage, and up to five days post-opening under chilled conditions. The study demonstrates the potential of using sweet corn and nai-miris as functional, locally sourced ingredients in developing sustainable vegan snack products suitable for commercial-scale production.

Keywords: ambient storage, proximate analysis, sensory evaluation, shelf life, sweet corn, vegan nugget

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