DEVELOPMENT OF A PROTEIN BAR USING PLANT-BASED PROTEIN AND FISH GELATIN BINDER AND EVALUATION OF SHELF LIFE STABILITY

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2025

ABSTRACT

The increasing demand for high-protein, nutrient-dense, and functional snack options has led to the development of innovative protein bars. This study aimed to formulate and develop a protein bar incorporating plant-based proteins and fish gelatin, providing a balanced and sustainable protein source. Plant-based proteins derived from soybeans, mung beans, and millets were used for their rich amino acid profile, while fish gelatin was incorporated as a natural binding agent and collagen source. Protein bars were developed through controlled ingredient selection and processing techniques to achieve optimal texture, flavor, and nutritional composition. Physicochemical properties such as moisture content, texture, color, and pH were analyzed, along with sensory evaluation conducted to find the best sample. Out of 4 treatment samples (T_1,T_2,T_3,T_4) panelists chose T_3 as the best treatment sample. A 60-day shelf-life study was conducted to examine the stability of the bars under controlled storage conditions, including microbiological safety and physicochemical properties. The results revealed that developed protein bar contain 29.63% protein, 18.06% moisture, 2.27% ash, 10.35% of fat, 5.52% of fiber. These results indicated that the combination of plant-based proteins and fish gelatin enhanced the textural integrity, protein quality, and overall sensory appeal of the product without affecting fish gelatin taste for sensory properties. Further research is recommended to optimize storage conditions and explore additional preservative options for improved product stability and nutritional benefits.

Keywords: Protein bar, plant-based protein, fish gelatin, shelf life, sensory evaluation

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