DEVELOPMENT AND QUALITY EVALUATION OF RICE-BASED BISCUIT FORTIFIED WITH BANANA PULP TO MINIMIZE THE POST-HARVEST LOSSES OF BANANA

By

R.A.D.N. Hansika

Department of Biosystems Technology, Faculty of Technology

Eastern University

Sri Lanka

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ABSTRACT

Banana is one of the most widely consumed fruits in Sri Lanka. However, improper handling practices, excessive ripening, and insufficient value added processing result in considerable post-harvest losses. In order to lower post-harvest losses and provide a wholesome, consumer preferred product, this study set out to develop a rice-based biscuit enriched with banana pulp. Five distinct treatments were created in weight basis T_1 (100: 0), T_2 (90:10), T_3 (80:20), T_4 (70:30), and T_5 (60:40) by varying the proportions of rice flour to banana pulp respectively. To identify the best formulations in terms of texture, flavor, taste, color, and overall acceptability, a sensory evaluation was carried out using a seven-point hedonic scale. Thirty semi-trained panelists participated in the sensory evaluation. Physical analyses of the biscuits' diameter, thickness, volume, density, and color were analyzed. Proximate analyses, such as moisture, fat, fiber, ash, and protein, were assessed. By calculating the Total Plate Count (TPC) and Yeast and Mold Count (YMC), microbial quality was evaluated. Based on the sensory, proximate, and physical analysis, T_3 was determined to be the most acceptable formulation. Sensory scores for T_3 were comparatively higher, with ratings for flavor (5.80), taste (6.07), texture (5.90), color (6.40), and overall acceptability (6.13). Proximate composition analysis revealed that T_3 contained 2.90% fiber, 78.88% carbohydrates, 2.19% ash, and 3.51% moisture. In addition, its physical characteristics such as thickness (0.87 cm) and density (0.43 g/cm^3) were within desirable ranges. The incorporation of 20% banana pulp significantly enhanced both the nutritional profile and sensory quality compared to the other formulations. T_3 was contained (Rice flour and banana pulp 80:20). The 20% banana pulp was given higher nutritional and sensory properties than other treatments. The outcome demonstrated that adding more banana pulp improved the biscuits' nutritional content and visual attractiveness. According to this study, rice-based biscuits enhanced with banana pulp can be used as a nutritious, high-value product in Sri Lanka's food industry and are a workable way to lower post-harvest losses of bananas.

Keywords: Banana pulp, Physical analysis, Post-harvest losses, Proximate analysis, Rice flour.

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