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From Waste to Health: An Innovation of High-Fiber Biscuit Using Brown Rice and Banana Peel

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Abstract

Consumer demand for biscuits is a recent trend. Due to their appealing sensory qualities, lengthy shelf life, and simplicity, biscuits are a typical staple food in many countries. Recently, developing products with health claims on the label has been the focus of interest since these products can create value-added and high demand. Combining solid components with high fiber could solve the problem of insufficient dietary fiber intake among the Malaysian population. Therefore, the purpose of this study is to create a high-fiber product utilizing brown rice and banana peels from the *Musa acuminata Colla x balbisiana* cv. Saba variety. Hedonic scale sensory test findings for the eight formulations revealed samples of formulation F6, which combined brown rice flour (31.5%) and 13.5% banana peel flour. For each characteristic looked at, F6 had the

greatest mean value, and variations in the biscuits' color, aroma, and appearance were statistically significant ($p < 0.05$). A substantial difference between the moisture content and the content of free fatty acids during storage was found in tests on quality storage for 8 weeks ($p < 0.05$). Microbiology test results showed that the number of colonies of bacteria, yeasts, and fungi is in a good range during the storage period in less than ten colonies. Brown rice with banana peel flour biscuits is expected to have a storage life span of more than 8 weeks. Finally, the consumer tests showed that this biscuits product has good potential to be commercialized from the positive response of 77% of respondents who said they would buy these biscuits if they were available in the market. A waste material such as banana peel can be transformed into a tasty and value-added product of a high-fiber biscuit. This advanced product development is not limited to minimizing food waste and food insecurity but can also contribute to nutrition improvement.

Keywords

Product development **Brown rice** **Banana peel**

Food innovation **High-fiber biscuits**

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