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A Comparative Study on the Physicochemical Properties and Cooking Preferences of Bario Rice Varieties

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Structured Abstract

Background: Rice is a fundamental staple food for more than half of the world's population in Malaysia, where native rice varieties like Bario rice varieties are important for both culture and nutrition. Comprehensive assessments of the physicochemical properties and sensory characteristics of Bario rice varieties especially in relation to conventional cooking techniques are still rare, despite the availability of basic nutritional data. This study utilized Bario Adan, black, Padan, and red rice as these rice provide little information on their physicochemical properties and sensory characteristics. The purpose of this study is to determine the physicochemical properties and assess consumer preference between rice cooker and steamer cooking method.

Methods: Each rice variety were divided into two (2) conditions, uncooked and cooked, which were used to conduct physical and chemical properties test respectively. Rice cooker and steamer were used to cook each rice variety at four (4) different cooking time respectively. Cooked rice then were dried overnight and ground prior to further analysis. For sensory evaluation, each rice variety were cooked beforehand using rice cooker and steamer prior to serve to 50 panelists.

Results: This study shows that Adan was the lightest, while black was the darkest. Padan rice exhibited excellent flowability, whereas red rice showed the highest breakage rate compared to other rice variety. Moisture and starch content increased significantly with cooking time for all varieties. Ash content also increased, with red rice showing the steepest increase in the rice cooker method and Adan rice in the steamer method. Lastly, sensory evaluation indicated that steaming was the most preferred cooking method.

Conclusion: In conclusion, the findings of this study indicated that Adan rice was the brightest rice among other Bario rice varieties, Padan rice was the most excellent in flowablity, and red rice showed the lowest kernel hardness and highest breakage rate. Other than that, chemical analysis showed that moisture, ash, and starch contents increased significantly with cooking time. Black rice maintained higher starch levels, while Adan rice demonstrated better mineral retention, particularly under steaming conditions. Lastly, sensory evluation confirmed that steaming was the preferred cooking method. Overall, all study objectives were achieved.

Keywords: Bario Rice Varieties, Boiling, Steaming, Physicochemical, Flowability

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