
Zero-Waste Transformation: Functional Herbal Tea from Dragon Fruit Peel

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Abstract

Food waste, such as fruit peels, is often discarded despite its nutritional potential. The study contributes to reducing food waste and aligns with the Sustainable Development Goals, particularly Zero Hunger and Good Health and Well-being. While tea is known for its health benefits, excessive consumption of traditional tea, which contains caffeine and additives, may cause side effects such as iron deficiency and insomnia. The objectives for this study are to develop a unique tea formulation using dragon fruit peel, evaluate its nutritional composition, and assess its acceptance among the Merlimau, Melaka community. The methodology involves cleaning, drying, grinding and blending dragon fruit peel with cinnamon. An organoleptic evaluation was conducted with 30 respondents, who rated taste, smell, texture, and colour using a 5-point Hedonic scale. Results showed an overall acceptance mean score of 3.93, with mean scores of 4.20 for texture, 3.27 for smell, 4.60 for colour, and 3.43 for taste. The nutritional analysis indicated that the dry tea blend contains, per 100 g, 0.7 g of crude protein, 80.5 g of carbohydrates, 0.4 g of fat, and 328 kcal of energy. However, the actual caloric intake from the brewed beverage is significantly lower. This study demonstrates a practical method for upcycling food waste into plant-based products with strong nutritional and commercial potential. In conclusion, the study supports sustainable practices and shows a high potential for commercialization of beverages as a nutritious, locally produced, and eco-friendly beverage.

Keywords: dragon fruit peel, food waste, tea, organoleptic
