

***Formulation of Mango Peel Extract Beverage Along With Shelf Life Estimation
and Its Characterization***

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ABSTRACT

Mango peel is a by-product of the post-harvest processing of mango fruit that has not been widely utilized, despite being known to contain bioactive compounds with potential health benefits. Mango peel can be processed into mango peel tea and further developed into a ready-to-drink (RTD) beverage. This study aimed to determine the optimal formulation, quality characteristics, and shelf life of mango peel tea beverage using the Accelerated Shelf Life Testing (ASLT) method based on the Arrhenius model. The formulations were tested using combinations of sucrose and maltodextrin, while shelf life estimation was carried out by storing the product at 4°C, 28°C, and 45°C for 15 days with 3-day intervals. Sensory evaluation results indicated that the most preferred formulation was 8% sucrose and 8% maltodextrin. The physical characteristics of the product showed color values of L 63.55, a* 3.19, and b* 41.76. Microbiologically, the product contained a total plate count (TPC) of $<25 \times 10^1$ CFU/mL and yeast and mold counts (YMC) of $<1 \times 10^1$ CFU/mL. The chemical characteristics included antioxidant activity (DPPH 93.52% and ABTS 53.38%), vitamin C content of 2.75 mg/100 mL, total phenolic content of 9651.9 mg/kg, flavonoid content of 933 mg QE/100g, and β -carotene content of 4.87 mg/100 mL. The critical parameter in shelf life estimation was pH, with the lowest activation energy value of 83.82 cal/mol·K. Based on the first-order kinetic model, the predicted shelf life of the mango peel tea beverage was 18 days at 4°C, 17 days at room temperature (28°C), and 17 days at 45°C.*

Keywords : *Mango peel, ready-to-drink beverage, formulation, Arrhenius*