

Development and Nutritional Characterization of Jam Incorporated with *Hibiscus* Flowers and Winter Melon Pulp

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Jam is a semi-solid product obtained by cooking fruit with sugar to enhance flavor, texture, and shelf life. This study developed a nutritionally enriched jam using *Hibiscus rosa-sinensis* flower extract and winter melon, commonly known as ash gourd pulp, through optimized formulations: Control (0:40:60 *Hibiscus*: melon: water), T1 (60:40:0), T2 (40:60:0), T3 (20:80:0), and T4 (80:20:0), each with 45 % sugar and 5 % citric acid. Jam was prepared by extracting *Hibiscus* petals, processing melon pulp, and boiling the mixture. Jam preparation involved extracting *Hibiscus* petals, processing melon pulp, and boiling the mixture at approximately 105 °C until reaching a final total soluble solids content of 68 °Brix. Sensory evaluation was conducted on T1, T2, T3, T4, and the control. Based on the sensory evaluation, T1 and the control were selected and subjected to proximate analysis using AOAC Methods. Sensory evaluation was conducted using a 5-point hedonic scale method with semi-trained 35 panelists. Statistical significance was determined using SPSS Version 25, employing the Friedman test ($p < 0.05$). The results of the sensory evaluation revealed that T1 received the highest score, followed by the control, T3, T2, and T4. Based on this, the T1 formulation was selected. Nutritional analysis revealed an overall improvement in the nutrient and mineral profiles from the control to T1 formulation. Specifically, a reduction was observed in salt (0.09→0.06 g/100g, control to T1, respectively), magnesium content (69.12→65.01 mg/100g), and reducing sugars (4.727→3.954%), while sodium (18.26→19.63 mg/100g), potassium (53.3→54.69 mg/100g), calcium (24.68→25.01 mg/100g), and protein levels (0.05→0.518 g/100g) increased and fat content remained constant at zero. T1 formulation showed favorable titratable acidity (1.185 ± 0.15 %), pH (3.7), moisture (1.24 ± 0.15 %), and yeast/mold count ($< 1 \times 10^2$ CFU/g). Overall, *Hibiscus rosa sinensis* and *Benincasa hispida*- based jam, particularly the T1 formulation, showed improved nutritional quality, acceptable sensory properties, and good microbial stability, indicating its potential as a value-added jam product.

Keywords: *Hibiscus* flower, Jam, Melon, Sensory evaluation