

Physicochemical Properties of Hard Candy Incorporated with Nam Nam Fruit (*Cynometra cauliflora*)

Nor Mafazlina Mohd Salleh^a, Suzaira Bakar^{a*}

Structured Abstract

Background: Nam Nam or also known as Katak Puru fruit is rich in nutrients. It is one of the most underutilised fruits that is available in Malaysia due to the short shelf-life and the way of consumption. In this study, hard candy that used nam nam juice was developed as a way to utilise the source. Physical and chemical analyses were carried out to study the characteristics of hard candy produced.

Methods: Pre-treatment of fruit was carried out and the juice obtained was used to develop four formulations of hard candy with different percentages of the juice (Control: 0%, F1: 5%, F2: 10%, F3: 15%). The physical properties: colour, moisture content pH, texture profile analysis (TPA), and refractive index (RI) were measured. While, chemical and antioxidant activities: sugar concentration, ascorbic acid, total phenolic compound (TPC) and total flavonoid compound (TFC) were carried out.

Results: Colour properties of the developed hard candy indicates F3 (38.03 ± 1.02) is the lightness (L^*), Control has the most greenness (-0.97 ± 0.07) and F2 has a slight redness (1.30 ± 0.11). In moisture content determination, F3 has the highest percentage with $0.82 \pm 0.00\%$. Control formulation recorded the highest acidity value (3.51 ± 0.01) of pH. In TPA, F1 recorded the highest force required (11.51 ± 1.17 kg/F) to break the hard candy, while F2 recorded the highest value of fracturability (7.03 ± 1.89 kg/F). RI value of the sample ranges from 61.90 ± 0.40 to $63.57 \pm 0.31\%$. Sugar concentration was determined by using the Lane-and-Eynon method. Control formulation recorded the highest percentage (82.50 ± 14.08) and the lowest is in F3 (80.17 ± 9.83). The highest amount of ascorbic acid was shown in F3 (0.049 ± 0.004 mg/g). The highest TPC content in the developed hard candy is in F3 (61.30 ± 0.29 ugGAE/mL). Lastly, F1 shows the highest TFC content from the analysis.

Conclusion: Increased in the concentration of nam nam juice will enhance the properties of produced hard candy. As recommendation, fruit juice extract or concentrated should be considered in the next incorporation of fruit into the product. Analysis such as ash content and caloric value, and antioxidant activities such as 2,2-diphenyl-1-picrylhydrazyl (DPPH) and Ferric reducing antioxidant power (FRAP) assay should be conducted.

Keywords: Nam Nam, physicochemical properties, antioxidant, hard candy

*Correspondence: suzaira@uitm.edu.my

^aSchool of Industrial Technology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia