

Nabeta Elfa Jihar. NPM 220331100111. Efek jenis *Pre Treatment* Pada Kualitas Buah Sawo (*Manilkara zapota*) Kering Menggunakan *Freeze Drying*. Di bawah Bimbingan **Mojiono, S.TP.,M.Si** dan **Nurmalisa Lisdayana, S.TP., M.Si.,**

ABSTRAK

Buah sawo (*Manilkara zapota*) merupakan buah tropis yang memiliki kadar air tinggi sehingga mudah mengalami kerusakan dan memiliki umur simpan yang relatif singkat. Salah satu upaya untuk memperpanjang umur simpan sekaligus mempertahankan mutu buah adalah dengan menggunakan metode *freeze drying*. Penelitian ini bertujuan untuk mengetahui pengaruh jenis *pre-treatment* terhadap kualitas buah sawo kering yang dihasilkan menggunakan metode *freeze drying*. Penelitian menggunakan Rancangan Acak Lengkap (RAL) nonfaktorial dengan tiga perlakuan, yaitu tanpa *pre-treatment* (TP), blanching pada suhu 90°C selama 3 menit (BL), dan ultrasonik dengan frekuensi 37 kHz selama 15 menit (US), masing-masing diulang sebanyak tiga kali. Proses *freeze drying* dilakukan pada suhu -52,2°C, tekanan 0,5 mBar selama 64 jam. Parameter yang diamati meliputi rendemen, kadar air, penyusutan ketebalan, tekstur (*hardness*), warna (L^* , a^* , b^* , hue, chroma, dan ΔE), serta kadar vitamin C. Data dianalisis menggunakan *One-Way ANOVA* pada taraf kepercayaan 95% dan dilanjutkan dengan uji Duncan apabila terdapat perbedaan nyata. Hasil penelitian menunjukkan bahwa jenis *pre-treatment* memberikan pengaruh nyata ($P < 0,05$) terhadap rendemen buah sawo kering, sedangkan terhadap kadar air, penyusutan ketebalan, tekstur (*hardness*), warna (L^* , a^* , b^* , hue, chroma, dan ΔE), serta kadar vitamin C tidak memberikan pengaruh nyata ($P > 0,05$). Perlakuan tanpa *pre-treatment* menghasilkan rendemen tertinggi sebesar 27% dan kadar vitamin C tertinggi sebesar 0,43 mg/100 g. Perlakuan ultrasonik menghasilkan kadar air terendah sebesar 4,3%, penyusutan ketebalan tertinggi sebesar 25,01%, serta nilai ΔE terendah yang menunjukkan perubahan warna paling kecil. Perlakuan blanching menghasilkan nilai *hardness* tertinggi sebesar 2289,22 g. Secara keseluruhan, penggunaan *pre-treatment* sebelum *freeze drying* belum memberikan peningkatan mutu fisikokimia buah sawo secara signifikan, kecuali terhadap rendemen produk.

Kata kunci: Buah sawo, *Freeze drying*, *Blanching*, *Ultrasonik*, *Pre-treatment*, *Kualitas fisikokimia*.

ABSTRACT

Sapodilla (Manilkara zapota) is a tropical fruit with a high moisture content, making it highly perishable and resulting in a relatively short shelf life. One approach to extend its shelf life while maintaining product quality is the application of freeze drying technology. This study aimed to evaluate the effect of different pre-treatment methods on the quality of freeze-dried sapodilla fruit. A non-factorial Completely Randomized Design (CRD) was employed with three treatments: no pre-treatment (TP), blanching at 90°C for 3 minutes (BL), and ultrasound treatment at a frequency of 37 kHz for 15 minutes (US), each with three replications. The samples were freeze-dried at -52.2°C under a pressure of 0.5 mBar for 64 hours. The observed parameters included yield, moisture content, thickness shrinkage, hardness, color attributes (L^* , a^* , b^* , hue, chroma, and ΔE), and vitamin C content. Data were analyzed using One-Way Analysis of Variance (ANOVA) at a 95% confidence level, followed by Duncan's Multiple Range Test when significant differences were observed. The results showed that the pre-treatment methods had a significant effect ($P < 0.05$) on the yield of freeze-dried sapodilla, but had no significant effect ($P > 0.05$) on moisture content, thickness shrinkage, hardness, color attributes (L^* , a^* , b^* , hue, chroma, and ΔE), or vitamin C content. The control treatment (without pre-treatment) produced the highest yield (27%) and the highest vitamin C content (0.43 mg/100 g). Ultrasound treatment resulted in the lowest moisture content (4.3%), the highest thickness shrinkage (25.01%), and the lowest ΔE value, indicating the smallest color change. Blanching treatment produced the highest hardness value (2289.22 g). Overall, the application of blanching and ultrasound as pre-treatments before freeze drying did not significantly improve the physicochemical quality of dried sapodilla, except for product yield.

Keywords: *Sapodilla, Freeze drying, Blanching, Ultrasound, Pre-treatment, Physicochemical quality.*