

RINGKASAN

Melon (*Cucumis melo L.*) merupakan salah satu komoditas yang populer dan digemari oleh masyarakat Indonesia. Melon Sky Rocket atau sering disebut melon hijau merupakan varietas yang paling banyak dibudidayakan di Indonesia. Namun, kadar air melon yang tinggi menyebabkan melon menjadi cepat rusak dan memiliki umur simpan yang pendek. Pengolahan buah melon menjadi bubuk menjadi alternatif cara untuk memperpanjang umur simpannya. Bubuk melon dibuat dengan metode *foam mat drying* dengan menggunakan *whey protein concentrate* (WPC) sebagai bahan pembusa dan maltodekstrin sebagai bahan pengisi dengan mempertimbangkan lama waktu pengadukan (*whipping time*). Penelitian ini bertujuan untuk mengetahui masing-masing faktor (konsentrasi *whey protein concentrate* (WPC), konsentrasi maltodekstrin dan lama waktu pengadukan) terhadap rendemen, kadar air, dan kelarutan bubuk melon, mengetahui perlakuan optimum pada pembuatan bubuk melon, serta mengetahui karakteristik fisikokimia dan sensori bubuk melon pada perlakuan optimum.

Metode penelitian ini menggunakan metode optimasi *Response Surface Methodology* (RSM) menggunakan *software Design Expert V.13*. Faktor yang diteliti yaitu konsentrasi *whey protein concentrate* (WPC) pada taraf 5-15%, konsentrasi maltodekstrin pada taraf 10-20% dan lama waktu pengadukan pada taraf 5-10 menit. Respon yang dioptimasi pada penelitian ini adalah rendemen, kadar air, dan kelarutan. Variabel uji karakterisasi meliputi rendemen, kelarutan, kadar air, kadar gula total, kadar vitamin C, kadar serat pangan, densitas busa, stabilitas busa, densitas kampa, serta pengujian sifat sensori yang meliputi warna, aroma, rasa, dan kesukaan secara *overall*. Hasil pengujian respon dianalisis menggunakan *software Design Expert V.13*.

Hasil penelitian menunjukkan bahwa konsentrasi *whey protein concentrate* (WPC) dan konsentrasi maltodekstrin berpengaruh secara signifikan terhadap rendemen, kadar air, dan kelarutan bubuk melon yang dihasilkan. Sementara lama waktu pengadukan tidak berpengaruh secara signifikan terhadap rendemen, kadar air, dan kelarutan bubuk melon yang dihasilkan. Penambahan 14,994% *whey protein concentrate*, 20% maltodekstrin, dan 5,087 menit waktu pengadukan menghasilkan bubuk melon dengan perlakuan optimum dengan rendemen $38,14 \pm 0,85\%$, kadar air $5,25 \pm 0,11 \%$, kelarutan $49,31 \pm 0,32 \%$, vitamin C $26,26 \text{ mg/100g}$, kadar gula total $11,93 \pm 1,67 \%$, serat pangan $5,12 \pm 0,05 \%$, densitas kampa $0,65 \pm 0,03 \text{ g/mL}$, densitas busa $0,66 \pm 0,002 \text{ g/mL}$, stabilitas busa $85,6 \pm 0,57 \%$, berwarna kuning keputihan, rasa tidak manis, aroma melon agak kuat, dan tingkat kesukaan keseluruhan (*overall*) agak suka.

SUMMARY

Melon (*Cucumis melo L.*) is one of the popular and favored commodities among the Indonesian people. Sky Rocket melon, often referred to as green melon, is the most widely cultivated variety in Indonesia. However, the high water content in melons causes them to spoil quickly and have a short shelf life. Processing melon fruit into powder is an alternative method to extend its shelf life. Melon powder is made using the foam mat drying method with whey protein concentrate (WPC) as the foaming agent and maltodextrin as the filler, considering the whipping time. This research aims to determine each factor (concentration of whey protein concentrate (WPC), concentration of maltodextrin, and whipping time). on yield, moisture content, and solubility of melon powder, to determine the optimal treatment in the production of melon powder, and to understand the physicochemical and sensory characteristics of melon powder under the optimal treatment.

This research method uses the Response Surface Methodology (RSM) optimization method with Design Expert V.13 software. The factors studied include the concentration of whey protein concentrate (WPC) at levels of 5-15%, the concentration of maltodextrin at levels of 10-20%, and whipping time at levels of 5-10 minutes. The responses optimized in this study are yield, moisture content, and solubility. The characterization variables include yield, solubility, moisture content, total sugar content, vitamin C content, dietary fiber content, foam density, foam stability, sponge density, as well as sensory property include color, aroma, taste, and overall preference. The response test results were analyzed using Design Expert V.13 software.

The research results show that the concentration of whey protein concentrate (WPC) and the concentration of maltodextrin significantly affect the yield, moisture content, and solubility of the resulting melon powder. Meanwhile, the whipping time does not significantly affect the yield, moisture content, and solubility of the produced melon powder. The addition of 14,994% whey protein concentrate, 20% maltodextrin, and 5.087 minutes of whipping time produced melon powder under optimum treatment with a yield of $38.14 \pm 0.85\%$, moisture content of $5.25 \pm 0.11\%$, solubility of $49.31 \pm 0.32\%$, vitamin C content of 26.26 mg/100g, total sugar content of $11.93 \pm 1.67\%$, dietary fiber of $5.12 \pm 0.05\%$, foam density of 0.65 ± 0.03 g/mL, foam density of 0.66 ± 0.002 g/mL, foam stability of $85.6 \pm 0.57\%$, yellowish-white color, non-sweet taste, slightly strong melon aroma, and overall liking level of somewhat like.