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**Pengaruh Penambahan Ekstrak Fikosianin Arthrospira platensis terhadap Karakteristik Fisik, Sensoris,
dan Antioksidan Marshmallow**
Melvi Izza Hedarina, Dr. R.A. Siti Ari Budhiyanti, S.TP., M.P.
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Intisari

Pengaruh Penambahan Ekstrak Fikosianin *Arthrospira platensis* terhadap Karakteristik Fisik, Sensoris, dan Antioksidan *Marshmallow*

Tujuan dari penelitian ini untuk mengetahui pengaruh penambahan ekstrak fikosianin *Arthrospira platensis* terhadap karakteristik fisik, sensoris, dan antioksidan *marshmallow*. Penelitian diawali dengan ekstraksi pigmen fikosianin dari *Arthrospira platensis* menggunakan metode *freezing-thawing*. *Marshmallow* ditambahkan dengan fikosianin sebesar 0% (kontrol), 1%, 3%, 5%, dan 7%. Parameter yang diamati meliputi tekstur (*hardness*, *cohesiveness*, *springiness*, *chewiness, gumminess),* densitas, warna, pH, aktivitas antioksidan, kadar fikosianin pada produk, *Quantitative Descriptive Analysis* (QDA)*, Time Intensity* (TI), dan preferensi konsumen. Data yang diperoleh dianalisis dengan analisis varian (ANOVA) pada tingkat kepercayaan 95% dan dilanjutkan dengan uji lanjut *Duncan's Multiple Range Test* (DMRT). Preferensi konsumen dianalisis menggunakan uji *Kruskal-Wallis* dengan uji lanjut *Mann-Whitney* (non-parametrik). Hasil penelitian menunjukkan bahwa penambahan fikosianin berpengaruh (*p-value*<0,05) terhadap nilai warna, aktivitas antioksidan, dan kadar fikosianin, namun tidak berpengaruh (*p-value*>0,05) terhadap nilai tekstur*,* pH, dan densitas. Perlakuan 7% ditetapkan sebagai perlakuan terbaik berdasarkan keseluruhan parameter uji. Perlakuan tersebut memiliki nilai *hardness* sebesar 11,87±0,67N; *cohesiveness* 0,87±0,03; *springiness* 0,94±0,02; *chewiness* 9,73±0,70N; *gumminess* 10,30±0,67N; pH 5,45±0,05; densitas 0,58±0,02g/cm³; L* 71,20±1,93; a* -13,80±0,45; b* -6,26±0,20; aktivitas antioksidan 57,68±0,17%; serta kadar fikosianin 0,12±0,007 mg/g. Hasil analisis sensori QDA dan TI menunjukkan penambahan fikosianin meningkatkan rasa pahit, aroma khas *earthy* cokelat, *flavor earthy* fikosianin, serta *aftertaste* pahit pada *marshmallow*. Uji penerimaan konsumen menunjukkan penambahan fikosianin berpengaruh terhadap warna, aroma, rasa, tekstur, dan penerimaan keseluruhan. Perlakuan 7% mempunyai indeks penerimaan konsumen di atas 70%, kadar air 29,54±1,73%, protein 5,02±0,94%, lemak 0,32±0,13%, abu 2,76±0,12%, dan karbohidrat 62,37±0,82%.

KATA KUNCI: *Arthrospira platensis*, fikosianin, *marshmallow*

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Abstract

The Effect of Phycocyanin Extract Addition from *Arthrospira platensis* on the Physical, Sensory, and Antioxidant Characteristics of Marshmallow

The purpose of this study was to determine the effect of phycocyanin extract from *Arthrospira platensis* on the physical, sensory, and antioxidant characteristics of marshmallow. This study began with the extraction of phycocyanin pigment from *Arthrospira platensis* using the freeze–thaw method. Phycocyanin extract was added to marshmallow formulations at concentrations of 0% (control), 1%, 3%, 5%, and 7%. The observed parameters included texture properties, namely hardness, cohesiveness, springiness, chewiness, and gumminess, as well as density, color, pH, antioxidant activity, phycocyanin content in the product, Quantitative Descriptive Analysis (QDA), Time Intensity (TI), and consumer preference. Data were analyzed using analysis of variance (ANOVA) at a 95% confidence level, followed by Duncan's Multiple Range Test (DMRT). Consumer preference data were analyzed using the Kruskal–Wallis test followed by the Mann–Whitney test as a non-parametric post hoc test. The results showed that the addition of phycocyanin significantly affected color, antioxidant activity, and phycocyanin content ($p < 0.05$), but did not significantly affect texture, pH, and density ($p > 0.05$). The 7% treatment was selected as the best treatment based on all observed parameters. This treatment had hardness of 11.87 ± 0.67 N; cohesiveness of 0.87 ± 0.03; springiness of 0.94 ± 0.02; chewiness of 9.73 ± 0.70 N; gumminess of 10.30 ± 0.67 N; pH of 5.45 ± 0.05; density of 0.58 ± 0.02 g/cm³; L* value of 71.20 ± 1.93; a* value of -13.80 ± 0.45; b* value of -6.26 ± 0.20; antioxidant activity of 57.68 ± 0.17%; and phycocyanin content of 0.12 ± 0.007 mg/g. The QDA and TI results showed that phycocyanin addition increased bitterness, earthy chocolate-like aroma, earthy phycocyanin flavor, and bitter aftertaste in marshmallow. The consumer preference test showed that phycocyanin addition significantly affected color, aroma, taste, texture, and overall acceptance. The 7% treatment had a consumer acceptance index above 70%, with moisture content of 29.54 ± 1.73%, protein content of 5.02 ± 0.94%, fat content of 0.32 ± 0.13%, ash content of 2.76 ± 0.12%, and carbohydrate content of 62.37 ± 0.82%.

KEYWORDS : *Arthrospira platensis*, phycocyanin, marshmallow