

**PENGGANTIAN PROTEIN KEDELAI DENGAN KONSENTRAT
PROTEIN *Spirulina plantesis* TERDEODORISASI PADA
KARAKTERISTIK FISIKOKIMIA DAN SENSORIS MINUMAN SERBUK
TINGGI PROTEIN**

INTISARI

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Spirulina (*Arthrospira plantesis*) dengan kandungan protein mencapai 60 – 70%, lemak berupa PUFA, dan komponen bioaktif berpotensi besar sebagai “*superfood*”. Namun, terdapatnya senyawa odor dalam spirulina yang menyebabkan odor *earthy* dan *musty* yang menjadi kendala penerimaan konsumen terhadap suatu produk yang disubstitusi oleh spirulina. Pada penelitian ini bertujuan untuk mengevaluasi pengaruh variasi rasio protein biomassa spirulina terdodorisasi terhadap karakteristik sensoris, menentukan formulasi terbaik berdasarkan evaluasi sensoris, serta mengevaluasi karakteristik fisikokimia dari produk minuman susu kedelai bubuk rasa coklat. Variasi rasio protein biomassa spirulina terdeodorisasi meliputi 0, 15, 20, 25, 30, dan 35%. Evaluasi sensoris yang dilakukan menggunakan metode QDA (*Quantitative Descriptive Analysis*) oleh panelis terlatih, penentuan formulasi terbaik dengan metode Indeks Efektivitas De Garmo, serta analisis fisikokimia (kadar air, abu, lemak, protein, karbohidrat, aktivitas antioksidan (%RSA), *apparent viscosity*, solubilitas, *water activity*, dan warna). Hasil menunjukkan peningkatan rasio dapat meningkatkan intensitas atribut sensoris yang identik spirulina, tetapi penurunan atribut yang tidak identik. Formulasi terbaik berdasarkan hasil evaluasi sensoris menunjukkan sampel P1 (rasio protein spirulina terdeodorisasi 15%). Hasil analisis fisikokimia sampel terbaik menunjukkan adanya penurunan kadar protein, lemak, abu, air, dan *water activity*, tetapi terjadi kenaikan pada kadar karbohidrat, %RSA, *apparent viscosity*, solubilitas, dan warna (kehijauan).

Kata kunci: *spirulina terdeodorisasi, susu kedelai bubuk, intensitas atribut sensoris, formulasi terbaik, karakteristik fisikokimia.*

REPLACEMENT OF SOY PROTEIN WITH DEODORIZED *Spirulina plantesis* PROTEIN CONCENTRATE IN HIGH-PROTEIN POWDERED BEVERAGE AND ITS EFFECTS ON THE PHYSICOCHEMICAL AND SENSORY PROPERTIES

ABSTRACT

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Spirulina (*Arthrospira platensis*), with a protein content of 60–70%, PUFA-type fats, and various bioactive components, has great potential as a “*superfood*”. However, the presence of odor compounds in spirulina, which produce earthy and musty notes, poses a challenge to consumer acceptance of products substituted with spirulina. This study aimed to evaluate the effect of varying protein ratios of deodorized spirulina biomass on the sensory characteristics, determine the best formulation based on sensory evaluation, and analyze the physicochemical properties of chocolate-flavored soy milk powder. The tested protein ratios of deodorized spirulina biomass were 0, 15, 20, 25, 30, and 35%. Sensory evaluation was carried out using the QDA (Quantitative Descriptive Analysis) method by trained panelists, the best formulation was selected using the De Garmo Effectiveness Index, and physicochemical parameters were analyzed, including moisture, ash, fat, protein, carbohydrates, antioxidant activity (%RSA), apparent viscosity, solubility, water activity, and color. The results showed that increasing the spirulina ratio enhanced the intensity of spirulina-associated sensory attributes, while reducing non-spirulina attributes. The best formulation based on sensory evaluation was sample P1 (15% spirulina protein ratio). The physicochemical analysis of P1 showed a decrease in protein, fat, ash, moisture, , and water activity, but an increase in carbohydrate content, antioxidant activity (%RSA), apparent viscosity, solubility, and greenish color.

Keywords: *deodorized spirulina, soymilk powder, intensity of sensory attribute, best formulation, physico-chemical properties.*