

Karakteristik Fisik, Kimia, dan Sensoris Minuman Tinggi Protein Bubuk Berbasis Kacang Merah Germinasi dan Isolat Protein Kedelai

INTISARI

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Sumber alternatif protein nabati saat ini semakin berkembang seiring dengan kebutuhan manusia sebagai contoh munculnya minuman tinggi protein berbasis nabati. Namun minuman nabati khususnya berbahan dasar legum memiliki keterbatasan karena keberadaan komponen anti nutrisinya, sehingga perlu dilakukan proses germinasi. Penelitian ini bertujuan untuk menganalisis pengaruh germinasi kacang merah dan penambahan isolat protein kedelai (30:0, 20:10, dan 10:20) terhadap karakteristik kimia, sifat fisik (uji brix, viskositas, intensitas warna, dan kestabilan), dan penerimaan sensoris, serta menentukan formulasi terbaik minuman bubuk tinggi protein berbasis kacang merah germinasi..

Hasil penelitian menunjukkan bahwa perlakuan germinasi dan kombinasi penambahan IPK berpengaruh signifikan terhadap karakteristik kimia terutama pada kadar protein, fisik, dan sensoris. Nilai kadar protein meningkat hingga mencapai 49,47% dan nilai viskositas pada minuman mencapai 404,00 cP yang diperoleh dari sampel pada formulasi rasio 10:20. Kestabilan tertinggi dimiliki oleh sampel G2 (10:20) karena endapan baru muncul di jam ke-24 dibandingkan dengan sampel lainnya. Selain itu, sensoris dengan nilai *overall acceptance* tertinggi dimiliki oleh sampel G2 dengan rasio 10:20. Formulasi terbaik berdasarkan hasil fisikokimia dan evaluasi sensoris menunjukkan sampel G2 (rasio kacang merah germinasi dan IPK 10:20).

Minuman tinggi protein *plant based* bubuk berbasis kacang merah germinasi dengan kombinasi IPK memiliki potensi yang bisa dikembangkan menjadi alternatif minuman fungsional berbasis nabati namun perlu dilakukan peningkatan formulasi untuk meningkatkan karakteristik sensoris produk.

Kata Kunci: Minuman Bubuk, Kacang Merah, Tinggi Protein, Germinasi, Isolat Protein Kedelai

Physic, Chemical, and Sensory Characteristics of Germinated Red Kidney Bean High Protein Powder Drink and Soy Protein Isolate

ABSTRACT

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Alternative sources of plant-based protein are increasingly being developed to meet human nutritional needs, one example being the growing production of high-protein plant-based beverages. However, plant-based drinks, particularly those derived from legumes, often face limitations due to the presence of anti-nutritional compounds, making processing methods such as germination necessary. This study aimed to analyze the effect of red bean germination and the addition of soybean protein isolate (30:0, 20:10, and 10:20) on chemical characteristics, physical properties (Brix test, viscosity, color intensity, and stability), and sensory acceptance, as well as to determine the best formulation of high-protein germinated red bean-based powdered drinks.

The results showed that germination treatment and combination of adding SPI significantly affected chemical characteristics, especially protein content, physical, and sensory properties. Protein content increased up to 49.47%, and the viscosity value of the beverage reached 404.00 cP, obtained from the sample with a 10:20 ratio formulation. The highest stability was observed in sample G2 (10:20) because new sediment appeared at the 24th hour compared to the other samples. In addition, the sensory evaluation with the highest overall acceptance was also found in sample G2 with a 10:20 ratio. The best formulation based on physicochemical results and sensory evaluation was sample G2 (germinated red bean and SPI ratio 10:20).

Red Kidney Bean Germinated powder drink combined with IPK has potential to be developed into a plant-based functional beverage alternative. However, formulation improvements are needed to enhance its sensory quality.

Keyword: Powder Drink, Red Kidney Bean, High Protein, Germination, Soy Protein Isolate