

KARAKTERISTIK FISIKO-KIMIA, SENSORIS DAN AKTIVITAS ANTIOKSIDAN HIDROLISAT KACANG KORO PEDANG (*Canavalia ensiformis* L.) SEBAGAI FLAVOR ENHANCER PADA SOSIS DAGING AYAM

INTISARI

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Kacang koro pedang merupakan sumber prekursor cita rasa yang potensial dan menarik untuk diteliti karena kandungan proteinnya yang tinggi (28,9–39,3%) serta produktivitasnya yang baik. Penelitian ini bertujuan untuk menganalisis sifat fisiko-kimia, sensoris, dan aktivitas antioksidan kacang koro pedang yang dihidrolisis tanpa enzim (P0), dengan penambahan enzim Protease HF (P1), Umamizyme (P2), dan kombinasi Umamizyme–Glutaminase (P3), serta menganalisis pengaruh penambahan hidrolisat terpilih (P3) terhadap kualitas sensoris sosis daging ayam. Parameter fisiko-kimia yang dianalisis meliputi kadar air, aktivitas air, berat molekul (SDS-PAGE), total asam amino bebas, komposisi asam amino, FTIR, rendemen, warna, aktivitas antioksidan, serta kualitas sensoris hidrolisat dan sosis daging ayam. Penelitian ini menggunakan metode eksperimental laboratorium dengan Rancangan Acak Lengkap (RAL) pola searah, dilanjutkan dengan analisis Duncan (DMRT) apabila terdapat perbedaan nyata atau sangat nyata antar perlakuan. Hasil analisis statistik menunjukkan bahwa perlakuan enzim berpengaruh signifikan terhadap berat molekul SDS-PAGE, total asam amino bebas, komposisi asam amino, FTIR, rendemen, warna, aktivitas antioksidan, serta kualitas sensoris hidrolisat (rasa asin, manis, umami, khas kacang koro pedang mentah, dan *off-flavor*). Uji lanjut Duncan menunjukkan bahwa perlakuan P2 dan P3 tidak menunjukkan perbedaan signifikan terhadap kadar air, aktivitas air, berat molekul, total asam amino bebas, rendemen, kecerahan warna (L^*), aktivitas antioksidan, dan rasa pahit. Berdasarkan uji De Garmo, perlakuan terbaik adalah P3 dengan kadar air 2,76% dan aktivitas air 0,28 (sesuai standar BPOM untuk produk bubuk), berat molekul lebih rendah (45, 23, 20, 13, dan 11 kDa), total asam amino bebas tertinggi (7.370,71 $\mu\text{g/mL}$), total asam amino tertinggi (55,48%), rendemen tertinggi (30,23%), intensitas warna L^* (51,53), a^* (1,47), b^* (10,63), rasa umami tertinggi (5,27), serta kapasitas antioksidan tertinggi (283,51 $\mu\text{mol trolox/mg sampel}$). Sosis daging ayam dengan penambahan P3 memiliki rasa umami tertinggi dibandingkan sosis komersial dan sosis tanpa hidrolisat, serta memiliki aroma daging yang lebih kuat dibandingkan tanpa penambahan hidrolisat. Hasil penelitian menunjukkan bahwa hidrolisat kacang koro pedang dengan perlakuan umamizyme (4%) dan glutaminase (1%) memiliki potensi terbaik sebagai *flavor enhancer* dengan aktivitas antioksidan tertinggi.

Kata kunci: Protein kacang koro pedang, Hidrolisis, Enzim, Kualitas fisiko-kimia, Kualitas sensoris, Aktivitas antioksidan.

PHYSICOCHEMICAL, SENSORY CHARACTERISTICS AND ANTIOXIDANT ACTIVITIES OF JACK BEAN (*Canavalia ensiformis* L.) HYDROLYSATES AS FLAVOR ENHANCERS IN CHICKEN MEAT SAUSAGES

ABSTRACT

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Jack bean (*Canavalia ensiformis* L) is a potential and interesting source of flavor precursors due to its high protein content (28.9–39.3%) and good productivity. This study aimed to analyze the physicochemical properties, sensory characteristics, and antioxidant activity of sword bean hydrolysates produced without enzymes (P0), with the addition of Protease HF (P1), Umamizyme (P2), and a combination of Umamizyme–Glutaminase (P3). The study also evaluated the effect of the selected hydrolysate (P3) on the sensory quality of chicken meat sausages. The physicochemical parameters analyzed included moisture content, water activity, molecular weight (SDS-PAGE), total free amino acids, amino acid composition, FTIR, yield, color, antioxidant activity, and sensory quality of both the hydrolysate and chicken sausage. The study was conducted using a completely randomized design (CRD) in a one-factor arrangement, followed by Duncan's Multiple Range Test (DMRT) when significant or highly significant differences were observed among treatments. Statistical analysis showed that enzyme treatments had a significant effect on SDS-PAGE molecular weight, total free amino acids, amino acid composition, FTIR spectra, yield, color, antioxidant activity, and the sensory attributes of the hydrolysate (saltiness, sweetness, umami, raw bean flavor, and off-flavor). Further Duncan analysis showed that treatments P2 and P3 did not differ significantly in terms of moisture content, water activity, molecular weight, total free amino acids, yield, lightness (L^*), antioxidant activity, and bitterness. According to De Garmo analysis, the best treatment was P3, with moisture content of 2.76% and water activity of 0.28 (in accordance with BPOM standards for powdered products), lower molecular weights (45, 23, 20, 13, and 11 kDa), the highest total free amino acids (7,370.71 $\mu\text{g/mL}$), highest total amino acid content (55.48%), highest yield (30.23%), lightness (L^*) of 51.53, redness (a^*) of 1.47, yellowness (b^*) of 10.63, highest umami score (5.27), and highest antioxidant capacity (283.51 $\mu\text{mol Trolox/mg sample}$). Chicken sausages with the addition of P3 had the highest umami flavor compared to commercial sausages and sausages without hydrolysate, and had a stronger meaty aroma than sausages without hydrolysate. Therefore, the results indicate that jack bean hydrolysate produced with a combination of umamizyme and glutaminase (P3) has the best potential as a flavor enhancer with the highest antioxidant activity.

Keywords: Jackbean protein, Hydrolysis, Enzymes, Physicochemical quality, Sensory quality, Antioxidant activity.