

OPTIMASI PENGHILANGAN HCN, ZAT ANTIGIZI DAN EKSTRAKSI PROTEIN KACANG GUDE (*Cajanus cajan* L. Millsp.) SERTA KARAKTERISASI SIFAT FUNGSIONALNYA

INTISARI

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Kacang gude (*Cajanus cajan* L. Millsp.) adalah sejenis kacang-kacangan (*legume*) yang banyak tumbuh di Indonesia. Kacang gude memiliki kandungan gizi yang cukup tinggi terutama pada kandungan protein dan karbohidratnya. Namun, pemanfaatan kacang gude sebagai sumber diet masih terbatas, salah satunya diakibatkan karena adanya kandungan zat atau senyawa toksin (HCN) dan antigizi (asam fitat, tripsin inhibitor) yang cukup tinggi. Dengan demikian, penelitian ini bertujuan untuk mengoptimalkan kualitas gizi protein kacang gude dan mengetahui sifat fungsionalnya.

Penelitian ini diawali dengan pembuatan tepung kacang gude dengan perlakuan *pretreatment* dan dievaluasi kadar senyawa HCN dan antigizinya, kemudian dilakukan *deffating*. Tahap selanjutnya adalah ekstraksi dan presipitasi protein pada pH tertentu berdasarkan nilai kelarutan proteinya. Berikutnya, dilakukan karakterisasi sifat fungsional pada produk tepung tinggi protein yang dihasilkan.

Hasil penelitian ini menunjukkan bahwa perlakuan *pretreatment* paling efektif adalah menggunakan larutan NaHCO_3 5% selama 48 jam tanpa perebusan, dengan diperoleh kadar HCN sebesar 3,28 ppm; asam fitat sebesar 9,94 mg/g; dan tripsin inhibitor sebesar 4,15 mg/g pada tepung kacang gude. Ekstraksi dilakukan pada pH 12 dan presipitasi pada pH 4. Produk hasil ekstraksi protein pada penelitian ini adalah konsentrat protein kacang gude dengan nilai kadar protein 64,47% (db); rendemen 5,91%; *yield* protein 58,26%; dan *protein recovery* 46,19%. Sifat fungsional yang diperoleh dari konsentrat protein kacang gude pada penelitian ini adalah WHC 2,50 ml air/g *solid*; OHC 3,06 ml minyak/g *solid*; kapasitas emulsi 39,33%; stabilitas emulsi 89,02%; kapasitas buih 40,16%; dan stabilitas buih sampai jam ke-4 sebesar 83,11%.

Kata Kunci: kacang gude, konsentrat protein, sifat fungsional

**OPTIMIZATION OF HCN AND ANTINUTRITIONAL COMPOUNDS
REMOVAL, PROTEIN EXTRACTION OF PINGEON PEA (*Cajanus cajan*
L. Millsp) AND CHARACTERIZATION ITS FUNCTIONAL
PROPERTIES**

ABSTRACT

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Pigeon pea (*Cajanus cajan* L. Millsp.) Is a type of legume that is widely grown in Indonesia. Pigeon pea has a fairly high nutritional content, especially in its protein and carbohydrate content. However, the utilization of pigeon pea as a dietary source is still limited, one of the reasons is due to the high content of toxin (HCN) and anti-nutritional compounds (phytic acid, trypsin inhibitor). Therefore, The purpose of this research was to increase nutritional quality of pigeon pea protein and characterizing it's functional properties.

This research began with making pigeon pea flour with pretreatment and evaluating the levels of HCN and anti-nutritional compounds, then eliminated the fat (defatting) content from pigeon pea flour. The next step was protein extraction and precipitation at pH based on the solubility value of the protein. Next, characterized the functional properties of the high protein flour product that was obtained.

The results showed that the most effective pretreatment in this study was to use 5% NaHCO₃ solution for 48 hours without boiling, resulting with HCN levels of 3.28 ppm, phytic acid of 9.94 mg/g, and trypsin inhibitor of 4.15 mg/g in pigeon pea flour. Protein extraction was carried out at pH 12 and precipitation at pH 4. The resulting product was pigeon pea protein concentrate with protein content of 64.47% (db), protein concentrate yield 5.91%, protein yield 58.26%, and protein recovery 46.19%. The functional properties obtained from the pigeon pea protein concentrate in this research were WHC 2.50 ml water/g solid, OHC 3.06 ml oil/g solid, emulsion capacity 39.33%, emulsion stability 89.02%, foam capacity 40.16%, and foam stability until the 4th hour 83.11%.

Keywords: pigeon pea, protein concentrate, functional properties