

## OPTIMASI PENGHILANGAN HCN, ZAT ANTIGIZI DAN EKSTRAKSI PROTEIN KORO BENGUK (*Mucuna pruriens* L.) SERTA KARAKTERISASI SIFAT FUNGSIONAL

### INTISARI

Oleh:

**FANNIA NADZIRA ABAR**

**17/415284/TP/12020**

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Salah satu potensi pangan yang dimiliki oleh Indonesia adalah koro benguk (*Mucuna pruriens* L.). Koro benguk termasuk dalam famili *Leguminosa*. Kandungan gizi yang terdapat pada koro benguk cukup tinggi khususnya kandungan protein. Tingginya kandungan protein pada biji koro benguk berpotensi diolah menjadi konsentrat protein yang memiliki kandungan protein minimal 50%. Namun tantangan dari pemanfaatan koro benguk sebagai alternatif sumber protein adalah tingginya senyawa toksin (HCN) dan antigizi (TI). Perlu adanya *pretreatment* untuk mengurangi senyawa toksin dan antigizi. Dengan demikian, tujuan penelitian ini yaitu mendapatkan produk ekstraksi protein rendah HCN dan tripsin inhibitor beserta sifat fungsionalnya.

Penelitian ini diawali pembuatan tepung koro benguk dengan perlakuan *pretreatment* dan dievaluasi kadar senyawa HCN dan TI. Tepung dengan perlakuan terpilih kemudian dilanjutkan proses *defatting*. Tahap selanjutnya penentuan kelarutan optimum protein dan dilanjutkan proses ekstraksi berdasarkan pH optimum ekstraksi dan presipitasi. Setelah itu dilanjutkan dengan karakterisasi sifat fungsional pada produk konsentrat protein yang dihasilkan.

Hasil penelitian ini menunjukkan perlakuan *pretreatment* paling efektif yaitu direndam dengan larutan  $\text{NaHCO}_3$  5% selama 48 jam diikuti perebusan selama 5 menit, dengan diperoleh penurunan kadar HCN sebesar 48,60% dan TI sebesar 99,20%. Ekstraksi dilakukan pada pH 12 dan presipitasi dilakukan pada pH 4. Produk hasil ekstraksi protein adalah konsentrat protein dengan kadar protein 62,27% (db); rendemen 11,90%; *yield* protein 67,31%; dan *protein recovery* 44,52%. Konsentrat protein koro benguk ini memiliki sifat fungsional WHC 3,99 ml air/g *solid*; OHC 2,99 ml minyak/g *solid*; kapasitas dan stabilitas emulsi 39,17% dan 84,42%; kapasitas dan stabilitas buih 45,39% dan 81,52%.

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Kata kunci: koro benguk, HCN, tripsin inhibitor, konsentrat protein, sifat fungsional

Pembimbing : Prof. Dr. Ir. Agnes Murdiati, M.S., Bambang Dwi Wijatniko, S.T.P., M.Agr.Sc., M.Sc.

**OPTIMIZATION OF HCN, ANTINUTRITIONAL COMPOUND  
REMOVAL, AND PROTEIN EXTRACTION OF VELVET BEAN (*Mucuna  
pruriens* L.) AND CHARACTERIZATION OF ITS FUNCTIONAL  
PROPERTIES**

**ABSTRACT**

**By:**

**FANNIA NADZIRA ABAR**  
**17/415284/TP/12020**

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One of the food potential owned by Indonesia is velvet bean (*Mucuna pruriens* L.). Velvet bean belongs to the family of *Leguminosae*. The nutritional content in velvet bean is quite high, especially protein. The high protein content of velvet bean has it potential to be processed into protein concentrates that have protein content at least 50%. But the challenge of utilizing velvet bean as an alternative source of protein is the high level of toxin compound (HCN) and anti-nutritional compound (trypsin inhibitor). There needs to be pretreatment to reduce toxin and anti-nutritional compounds. Therefore, the purpose of this research is to obtain low HCN and TI protein extraction product and it's functional properties.

This research begins with making velvet bean flour with pretreatment and evaluating the levels of HCN and TI compounds, continued by defatting process. The next stage is determining the optimum solubility of proteins with various pH. Extraction is carried out based on optimum pH extraction and precipitation, continued with characterization of protein concentrate functional properties.

The results of this study showed the most effective pretreatment is soaked with a solution of NaHCO<sub>3</sub> 5% for 48 hours followed by boiling for 5 minutes, with obtained a decrease in HCN levels by 48,60% and TI by 99,20%. Extraction is performed at pH 12 and precipitation is performed at pH 4. Protein extraction products are protein concentrates with protein content of 62,27% (db); protein concentrate yield 11,90%; protein yield 67,31%; and protein recovery of 44,52%. This velvet bean protein concentrate has functional properties WHC 3,99 ml water/g solid; OHC 2,99 ml solid oil/g; capacity and stability of emulsions of 39,17% and 84,42%; capacity and stability of foam 45,39% and 81,52%.

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Keywords: velvet bean, HCN, trypsin inhibitor, protein concentrate, functional properties

Supervisors : Prof. Dr. Ir. Agnes Murdiati, M.S., Bambang Dwi Wijatniko, S.T.P., M.Agr.Sc., M.Sc.