

**PENGARUH PERLAKUAN *AUTOCLAVING-COOLING* TERHADAP  
KECERNAAN, SIFAT FISIK, DAN FUNGSIONAL EKSTRAK PROTEIN  
KORO PEDANG PUTIH (*Canavalia ensiformis* (L.) DC)**

**INTISARI**

Oleh:

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Koro pedang putih (*Canavalia ensiformis* (L.) DC) memiliki kadar protein yang cukup tinggi, namun belum banyak dimanfaatkan karena kadar senyawa toksik dan antigizinya seperti asam sianida, tanin, fitat, dan *trypsin inhibitor*. Salah satu bentuk pemanfaatannya adalah menjadi konsentrat atau isolat protein yang digunakan sebagai *binder* pada sosis ayam. Namun demikian, aspek gizi seperti pencernaan dari ekstrak protein tersebut belum diteliti lebih lanjut. Di sisi lain, dapat diketahui bahwa proses pemanasan dapat meningkatkan pencernaan protein dengan semakin bertambahnya waktu pemanasan. Salah satu proses pemanasan yang dapat dilakukan adalah dengan autoklaf. Tujuan dari penelitian ini adalah mengetahui pengaruh waktu dan siklus *autoclaving-cooling* terhadap pencernaan, sifat fisik (warna dan *bulk density*), dan sifat fungsional (daya serap air, daya serap minyak, kapasitas dan stabilitas emulsi, kapasitas dan stabilitas buih) ekstrak protein koro pedang putih.

Variabel yang digunakan adalah waktu *autoclaving* dengan taraf 30, 45, dan 60 menit dan siklus *autoclaving-cooling* dengan taraf 1, 2, dan 3 siklus. Dari hasil penelitian diketahui bahwa variabel waktu dan siklus *autoclaving-cooling* memberikan pengaruh signifikan terhadap pencernaan protein dilihat dari parameter derajat hidrolisis dan pencernaan protein *in vitro*. Komponen protein ekstrak koro pedang putih disepariasi berdasarkan berat molekulnya menggunakan SDS-PAGE. Protein utama berupa canavalin (49 kDa) dan concanavalin-A (27 kDa) terdegradasi menjadi fragmen-fragmen yang lebih kecil. Kondisi perlakuan terbaik adalah pada taraf waktu 60 menit dan 3 siklus *autoclaving-cooling*. Perlakuan *autoclaving-cooling* selama 60 menit 3 siklus memberikan pengaruh yang signifikan terhadap warna, daya serap air, daya serap minyak, dan stabilitas buih ( $p < 0,05$ ) dan tidak memberikan pengaruh signifikan terhadap kapasitas dan stabilitas emulsi serta kapasitas buih ( $p > 0,05$ ).

Kata kunci: koro pedang putih, *autoclaving-cooling*, derajat hidrolisis, pencernaan protein *in vitro*, sifat fisik dan fungsional protein

**EFFECT OF AUTOCLAVING-COOLING ON DIGESTIBILITY,  
PHYSICAL, AND FUNCTIONAL PROPERTIES OF JACKBEAN  
PROTEIN EXTRACT (*Canavalia ensiformis* (L.) DC)**

**ABSTRACT**

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Jackbean (*Canavalia ensiformis* (L.) DC) has a fairly high protein content but has not been widely used because it contains high levels of toxic and anti-nutrition substances such as hydrogen cyanide, tannin, phytate, and trypsin inhibitor. Jackbean is utilized as a concentrate or protein isolate used as a binder on a chicken sausage. However, some aspects of nutrition such as the digestibility of this protein extract have not been further studied. On the other hand, it has been known that heating process can increase protein digestibility with the increase in time. One of the heating processes that can be done is by autoclaving. The purpose of this study was to study the *autoclaving-cooling* time and cycle of digestibility, physical properties (color and bulk density), and functional properties (water holding capacity, oil holding capacity, emulsion properties, foaming properties) of jackbean protein extract.

The variables used were autoclave time with a level of 30, 45, and 60 minutes and an autoclave-cooling cycle with levels 1, 2, and 3 cycles. From the results of the study, it was found that the time and cycle variables of *autoclaving-cooling* had a significant influence on protein digestibility with two parameters of hydrolysis and *in vitro* protein digestibility. The protein component of the protein extract was separated using SDS-PAGE. The main protein in the jackbean which is canavalin (49 kDa) and concaavalin-A (27 kDa) is degraded into smaller fragments. The best condition is obtained at 60 minutes and 3 cycles of *autoclaving-cooling*. The *autoclaving-cooling* treatment for 60 minutes 3 cycles had a significant effect on color, water absorption, oil absorption, and foaming capacity ( $p < 0,05$ ) but did not give a significant effect on emulsion capacity and stability and also foaming stability ( $p > 0,05$ ).

Keywords: jackbean, *autoclaving-cooling*, degree of hydrolysis, *in vitro* protein digestibility, physical and functional properties of protein