

## **ISOLASI DAN KARAKTERISASI KOLAGEN DARI KULIT DOMBA GARUT MENGGUNAKAN ASAM DAN ENZIM NEUTRASE**

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### **INTISARI**

Kolagen adalah salah satu jenis protein yang banyak dimanfaatkan dalam bidang pangan dan kesehatan namun samapai saat ini masih mengandalkan impor. Penelitian ini bertujuan untuk mengisolasi dan mengetahui karakteristik kolagen dari kulit domba Garut melalui hidrolisis menggunakan enzim neutrase dengan perlakuan pendahuluan 0,5 M  $\text{CH}_3\text{COOH}$ . Perlakuan level konsentrasi neutrase yaitu 0,1%; 0,3% dan 0,5%. Karakter fisik kolagen meliputi rendemen, pH dan viskositas. Data yang diperoleh dianalisis menggunakan rancangan percobaan Rancangan Acak Lengkap (RAL) pola searah dan perbedaan mean dilanjut dengan uji Duncan Multiple Range Test (DMRT). Karakter kualitatif ditentukan dengan Spektra *Fourier Transform Infrared Spectroscopy* (FTIR), profil berat molekul dengan *Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis* (SDS-PAGE), dan stabilitas suhu dengan *Differential Scanning Calorimetric* (DSC) ditentukan dengan diskriptif analitik. Hasil penelitian menunjukkan nilai persentase rendemen paling tinggi sebanyak 15,22% pada penambahan 0,5% enzim. Nilai pH kolagen asam pada kisaran pH 4. Analisis gugus fungsi FTIR menunjukkan puncak serapan spesifik untuk kolagen. Analisis profil berat molekul menunjukkan kolagen memiliki pita  $\alpha 1$  dan  $\alpha 2$  dalam *range* kolagen tipe I. Analisis stabilitas termal DSC, sampel menunjukkan variasi Tmax pada setiap perlakuan. Hasil nilai viskositas paling tinggi pada perlakuan 0,3% enzim yaitu 4,80 cP. Peningkatan level konsentrasi enzim neutrase menghasilkan persentase rendemen yang semakin tinggi.

**Kata kunci** : kulit domba Garut, neutrase, kolagen, karakterisasi.

## **ISOLATION AND CHARACTERIZATION OF COLLAGEN FROM GARUT SHEEP SKIN USING ACID AND NEUTRASE ENZYME**

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### **ABSTRACT**

Collagen is a type of protein that is widely used in the food and health sectors, but until now it still relies on imports. This study aims to isolate and determine the characteristics of collagen from the skin of Garut sheep through hydrolysis using the neutrase enzyme with 0.5 M CH<sub>3</sub>COOH pre-treatment. The treatment level of neutrase concentration is 0.1%; 0.3% and 0.5%. The physical characteristics of collagen include yield, pH and viscosity. The data obtained were analyzed using a completely randomized design (CRD) with a one-way pattern and the mean difference was followed by the Duncan Multiple Range Test (DMRT). Qualitative characters were determined by Fourier Transform Infrared Spectroscopy (FTIR), molecular weight profiles by Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis (SDS-PAGE), and temperature stability by Differential Scanning Calorimetric (DSC) were determined by analytical descriptive. The results showed that the highest yield percentage was 15.22% with the addition of 0.5% enzyme. The pH value of collagen is acidic in the pH range of 4. FTIR functional group analysis shows specific absorption peaks for collagen. Molecular weight profile analysis showed that collagen has  $\alpha 1$  and  $\alpha 2$  bands in the range of type I collagen. DSC thermal stability analysis, samples showed variations in T<sub>max</sub> in each treatment. The result of the highest viscosity value was in the 0.3% enzyme treatment, namely 4.80 cP. Increasing the level of concentration of the neutrase enzyme results in a higher yield percentage.

**Keywords** : Garut sheep skin, neutrase, collagen, characterization.