



ISOLASI DAN KARAKTERISASI KOLAGEN DARI CEKER BEBEK HIBRIDA MENGUNAKAN ENZIM BROMELIN

INTISARI

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Kolagen merupakan protein yang paling melimpah dalam tubuh hewan. Salah satu bahan baku potensial yang dapat dimanfaatkan sebagai bahan baku kolagen yaitu ceker bebek Hibrida. Penelitian ini bertujuan untuk mengetahui pengaruh dan interaksi dari perbedaan jumlah penambahan enzim bromelin dan lama perendaman terhadap karakteristik kolagen ceker bebek Hibrida. Variasi jumlah enzim bromelin yang digunakan: 0%, 0,2%, 0,4%, 0,6%, dan 0,8%. Lama perendaman yang digunakan yaitu 12, 18, dan 24 jam. Variabel yang diamati meliputi rendemen kasar, pH, viskositas, konsentrasi protein, analisis gugus fungsi Fourier Transform Infrared Spectroscopy (FTIR), analisis Differential Scanning Calorimetry, dan analisis berat molekul Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis (SDS-PAGE). Hasil penelitian menunjukkan ceker bebek Hibrida dapat dijadikan sebagai sumber bahan baku alternatif kolagen. Enzim bromelin dapat digunakan untuk isolasi kolagen dilihat dari hasil rendemen dan konsentrasi protein. Kombinasi perlakuan enzim bromelin dan lama perendaman dapat mempengaruhi karakteristik kolagen ceker bebek Hibrida. Kolagen ceker bebek Hibrida teridentifikasi sebagai kolagen tipe I terlihat dari keberadaan lima gugus fungsional dan ditemukannya rantai β , α_1 , dan α_2 seperti pada kolagen komersial Tipe I dari tendon sapi.

Kata Kunci: Ceker bebek, Isolasi kolagen, Enzim bromelin, Karakterisasi



ISOLATION AND CHARACTERIZATION OF COLLAGEN FROM HYBRID DUCK FEET USING BROMELAIN ENZYME

ABSTRACT

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Collagen is the most abundant protein in the animal body. One potential raw material for collagen production is Hybrid duck feet. This study aimed to investigate the effects and interactions of different bromelain enzyme concentrations and soaking durations on the characteristics of collagen extracted from hybrid duck feet. Bromelain enzyme was applied at concentrations of 0%, 0.2%, 0.4%, 0.6%, and 0.8%. The soaking time used were 12, 18, and 24 hours. The observed variables included crude yield, pH, viscosity, protein concentration, functional group analysis using Fourier Transform Infrared Spectroscopy (FTIR), thermal stability analysis using Differential Scanning Calorimetry (DSC), and molecular weight analysis using Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis (SDS-PAGE). The results showed that Hybrid duck feet can be utilized as an alternative source of raw material for collagen. The bromelain enzyme is effective for collagen isolation, based on yield and protein concentration. The characteristics of Hybrid duck feet collagen are influenced by the combination of bromelain enzyme and the soaking time. Hybrid duck feet collagen was identified as type I collagen, indicated by the presence of five functional groups and the detection of β , $\alpha 1$, and $\alpha 2$ chains similar to those found in commercial type I collagen.

Keywords: Duck feet, Collagen isolation, Bromelain enzyme, Characterization