Potensi Hidrolisat dari Isolat Protein dengan Enzim Papain sebagai Antioksidan

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INTISARI

Penelitian ini bertujuan untuk mengetahui aktivitas antioksidan dari hidrolisat isolat protein yang dihidrolisis menggunakan enzim papain. Alur penelitian ini meliputi *screening* aktivitas enzim papain komersil, pengujian variasi waktu hidrolisis isolat protein secara enzimatik menggunakan enzim papain, dan pengujian aktivitas antioksidan hidrolisat isolat protein menggunakan metode DPPH (2,2- diphenyl-1-picrylhdrazyl). Data variasi waktu hidrolisis isolat protein dianalisis dengan deskriptif dan divisualisasikan menggunakan heatmap. Data presentase inhibisi dianalisis menggunakan *oneway anova*. Hasil penelitian menunjukan bahwa pada hidrolisis menggunakan variasi waktu 30, 60, 120, dan 240 menit menghasilkan konsentrasi asam amino yang terus meningkat hingga menit ke-120 dan pada beberapa isolat pada menit ke-240 mengalami penurunan konsentrasi asam amino. Pengujian aktivitas antioksidan hidrolisat isolat protein menggunakan metode DPPH (2,2 -diphenyl- 1-picryhydrazyl) menunjukan bahwa ketujuh hidrolisat isolat protein memiliki aktivitas antioksidan dengan presentase inhibisi antar isolat protein memiliki perbedaan secara signifikan. Nilai presentase hambatan inhibisi berada pada rentang 58,51% hingga 77,77% dengan aktivitas antioksidan tertinggi yaitu albumin.

Kata kunci: Isolat protein, enzim papain, hidrolisis enzimatik, antioksidan

Potential of Hydrolysate from Protein Isolates with Papain as Antioxidant

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ABSTRACT

This study aims to determine the antioxidant activity of protein isolate hydrolysate hydrolyzed using papain enzyme. The research process included screening the activity of commercial papain enzymes, testing variations in the enzymatic hydrolysis time of protein isolates using papain enzymes, and testing the antioxidant activity of protein isolate hydrolysates using the DPPH (2,2-diphenyl-1-picrylhydrazyl) method. The data on the variation in protein isolate hydrolysis time was analyzed descriptively and visualized using a heat map. The inhibition percentage data was analyzed using one-way ANOVA. The results showed that hydrolysis using variations in time of 30, 60, 120, and 240 minutes produced amino acid concentrations that continued to increase until the 120th minute, and in some isolates at the 240th minute, there was a decrease in amino acid concentration. Testing the antioxidant activity of protein isolate hydrolysates using the DPPH (2,2-diphenyl-1-picryhydrazyl) method showed that all seven protein isolate hydrolysates had antioxidant activity, with significant differences in inhibition percentages between protein isolates. The inhibition percentage ranged from 58.51% to 77.77%, with albumin exhibiting the highest antioxidant activity.

Keywords: Protein isolate, papain enzyme, enzymatic hydrolysis, antioxidant