

Analisis Aktivitas Antioksidan Hidrolisat Protein Jeroan Ikan Bandeng (*Chanos chanos*) dengan Enzim Bromelin

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ABSTRAK

Latar Belakang: Radikal bebas berlebih dalam tubuh dapat menyebabkan stres oksidatif dan memicu berbagai penyakit. Hidrolisat protein ikan (HPI), khususnya dari jeroan ikan bandeng (*Chanos chanos*), berpotensi sebagai sumber antioksidan karena mengandung peptida bioaktif. Kandungan protein dan asam lemak omega-3 dalam jeroan menjadikannya bahan yang potensial sebagai HPI.

Tujuan: Menganalisis aktivitas antioksidan hidrolisat protein jeroan ikan bandeng (*Chanos chanos*) dengan penambahan enzim bromelin pada berbagai konsentrasi.

Metode: Penelitian eksperimental dengan rancangan acak lengkap (RAL) satu faktor, yaitu variasi konsentrasi enzim bromelin (0%, 4%, 5%, dan 6%). Proses hidrolisis dilakukan pada suhu 55°C dan pH 7 selama 180 menit. Aktivitas antioksidan dianalisis menggunakan metode ABTS. Data dianalisis menggunakan uji One Way ANOVA dan uji lanjut Duncan.

Hasil: Terdapat perbedaan signifikan aktivitas antioksidan antar perlakuan ($p = 0,011$). Konsentrasi 5% menghasilkan aktivitas antioksidan terbaik ($IC_{50} 2547,73 \pm 53,13$ ppm). Aktivitas antioksidan meningkat dengan penambahan enzim hingga titik optimal, lalu menurun pada konsentrasi 6% ($IC_{50} 3269,93 \pm 164,37$ ppm) karena kemungkinan terjadi hidrolisis berlebih.

Simpulan: Penambahan enzim bromelin berpengaruh terhadap aktivitas antioksidan hidrolisat protein jeroan ikan bandeng. Konsentrasi optimum adalah 5% dengan hasil aktivitas antioksidan terbaik tetapi secara umum aktivitas antioksidannya masih tergolong lemah ($IC_{50} > 200$ ppm).

Kata Kunci: Hidrolisat protein ikan, antioksidan, enzim bromelin, jeroan ikan, ABTS.

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Analysis of Antioxidant Activity of Protein Hydrolysate from Milkfish (*Chanos chanos*) Viscera Using Bromelain Enzyme

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ABSTRACT

Background: Excessive free radicals in the body can lead to oxidative stress and trigger various diseases. Fish protein hydrolysate (FPH), particularly from the viscera of milkfish (*Chanos chanos*), has potential as an antioxidant source due to its content of bioactive peptides. The presence of protein and omega-3 fatty acids in the viscera makes it a promising material for FPH production.

Objective: To analyze the antioxidant activity of fish protein hydrolysate from *Chanos chanos* viscera with adding bromelain enzyme at various concentrations.

Methods: This study used an experimental design with a completely randomized design (CRD) involving a single factor—bromelain enzyme concentration (0%, 4%, 5%, and 6%). Hydrolysis was conducted at 55°C and pH 7 for 180 minutes. Antioxidant activity was analyzed using the ABTS method. Data were analyzed using One-Way ANOVA followed by Duncan's post hoc test.

Results: There was a significant difference in antioxidant activity among treatments ($p = 0.011$). The 5% enzyme concentration showed the best antioxidant activity ($IC_{50} = 2547.73 \pm 53.13$ ppm). Antioxidant activity increased with enzyme addition up to an optimal point, then decreased by 6% ($IC_{50} 3269,93 \pm 164,37$ ppm) due to possible over-hydrolysis.

Conclusion: Bromelain enzyme addition affects the antioxidant activity of fish protein hydrolysate from *Chanos chanos* viscera. The optimal concentration was 5%, although overall antioxidant activity remained weak ($IC_{50} > 200$ ppm).

Keywords: Fish protein hydrolysate, antioxidant, bromelain enzyme, fish viscera, ABTS.

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