

## ABSTRAK

Kacang tanah (*Arachis hypogaea* L.) telah dikenal sebagai salah satu biji-bijian yang mengandung banyak protein sehingga berpotensi sebagai sumber penghasil peptida bioaktif seperti antioksidan. Tujuan dari penelitian ini adalah mengetahui potensi bakteri *Bacillus subtilis* B298 dalam menghasilkan protease dan menguji aktivitas antioksidan protein hidrolisat hasil hidrolisis kacang tanah oleh enzim protease. Penelitian dimulai dengan penentuan aktivitas spesifik enzim pada ekstrak kasar dan didapat hasil sebesar 0,072 U/mL dengan kadar protein sebesar 0,012 U/mg. Karakterisasi enzim protease meliputi pengaruh variasi suhu dan pH. Hidrolisis protein kacang tanah dilakukan dengan variasi waktu inkubasi 0, 10, 20, 30, 40, 50, dan 60 menit. Hidrolisis tertinggi tercapai pada waktu inkubasi 60 menit dengan persentase derajat hidrolisis sebesar 20% dengan pH optimum 8 dan suhu optimum 40 °C. Uji antioksidan protein hidrolisat kacang tanah dilakukan dengan metode DPPH. Protein hidrolisat yang diinkubasi selama 10 menit memiliki persentase inhibisi tertinggi yakni 73% dengan nilai IC<sub>50</sub> sebesar 0,391 mg/mL dan nilai AAI sebesar 0,050 yang menunjukkan bahwa protein hidrolisat kacang tanah yang dihasilkan tergolong antioksidan lemah. Uji hemolisis yang digunakan untuk menguji keamanan protein hidrolisat kacang tanah dengan melihat kemampuan lisisnya terhadap sel darah merah menunjukkan persen hemolisis sebesar 4%.

**Kata Kunci** : antioksidan, *Bacillus subtilis*, hidrolisis, kacang tanah, protease

## ABSTRACT

Peanut (*Arachis hypogaea* L.) has been known as one of the grain that contains a lot of protein so it has the potential as a source producing bioactive peptides such as antioxidants. The aim of this research was to determine the potential of the bacterium *Bacillus subtilis* B298 in producing proteases and tested the antioxidant activity of hydrolyzed protein from hydrolyzed peanuts by protease enzymes. The research begins with the determination of the specific activity of the enzyme in the crude extract and obtained a yield of 0.072 U/mL with protein content of 0.012 U/mg. The characterization of the protease enzyme includes the effect of temperature variations and pH. Hydrolysis of peanut protein was carried out with various incubation times 0, 10, 20, 30, 40, 50, and 60 minutes. The highest hydrolysis was achieved at 60 minutes with a degree of hydrolysis percentage of 20% with an optimum pH of 8 and optimum temperature of 40 °C. Peanut hydrolysate protein antioxidant test was carried out using the DPPH method. Protein hydrolysate which was incubated for 10 minutes had the highest percentage of inhibition, namely 73% with IC<sub>50</sub> value of 0,391 mg/mL and AAI value of 0.05 which showed that the resulting peanut hydrolysate protein belonged to weak antioxidant. Hemolysis test used to test the safety of protein hydrolysis peanut by looking at its lysis ability against red blood cells shows the percentage of hemolysis by 4%.

**Keywords:** antioxidant, *Bacillus subtilis*, hydrolysis, peanut, protease