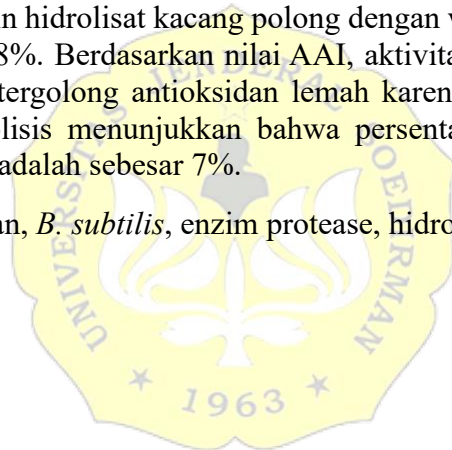


## ABSTRAK

Kacang polong (*Pisum sativum L.*) merupakan salah satu tanaman *legume* yang memiliki nutrisi dan protein yang lebih tinggi dibandingkan tanaman sereal. Protein kacang polong tersedia dalam berbagai bentuk termasuk tepung, konsentrat, dan isolat kacang polong. Protein kacang polong biasanya dimanfaatkan dalam bentuk konsentrat dan dapat diproduksi melalui proses hidrolisis enzimatis. Tujuan penelitian ini untuk mengetahui potensi enzim protease isolat *B. subtilis* B298 dalam menghidrolisis protein kacang polong untuk menghasilkan protein hidrolisat dengan aktivitas antioksidan. Penelitian ini, dilakukan dengan memproduksi enzim protease *B. subtilis* B298 serta karakterisasi enzim meliputi pengaruh suhu dan pH. Hidrolisis protein kacang polong dibuat pada kondisi optimum dengan lama waktu inkubasi 10, 20, 30, 40, 50, dan 60 menit. Aktivitas antioksidan protein hidrolisat dilakukan dengan metode DPPH serta dilakukan uji hemolisis. Hasil penelitian menunjukkan enzim protease *B. subtilis* B298 bekerja pada suhu optimum 45 °C dan pH 9. Hidrolisis tertinggi diperoleh pada waktu inkubasi 60 menit dengan nilai derajat hidrolisis sebesar 44%. Persentase inhibisi tertinggi terhadap radikal DPPH ditunjukkan oleh protein hidrolisat kacang polong dengan waktu inkubasi 10 menit dengan nilai sebesar 38%. Berdasarkan nilai AAI, aktivitas antioksidan hidrolisat kacang polong masih tergolong antioksidan lemah karena nilai AAI < 0,5 yaitu 0,103. Hasil uji hemolisis menunjukkan bahwa persentase hemolisis hidrolisat protein kacang polong adalah sebesar 7%.

**Kata kunci:** antioksidan, *B. subtilis*, enzim protease, hidrolisis, kacang polong



## ABSTRACT

Peas (*Pisum sativum L.*) is a legume crop that has higher nutrients and protein than cereal crops. Pea protein is available in various forms including flour, concentrate, and pea isolate. Pea protein is usually utilized in concentrate form and can be produced through enzymatic hydrolysis process. The aim of this study was to determine the potential of protease enzyme isolate *B. subtilis* B298 in hydrolyzing pea protein to produce protein hydrolysate with antioxidant activity. This study was conducted by producing protease enzyme of *B. subtilis* B298 and characterizing the enzyme including the effect of temperature and pH. Hydrolysis of pea protein was made at optimum conditions with incubation time of 10, 20, 30, 40, 50, and 60 minutes. Antioxidant activity of protein hydrolysate was carried out by DPPH method and hemolysis test was conducted. The results showed that the protease enzyme *B. subtilis* B298 worked at an optimum temperature of 45 °C and pH 9. The highest hydrolysis was obtained at an incubation time of 60 minutes with a hydrolysis degree value of 44%. The highest percentage of inhibition against DPPH radicals was shown by pea protein hydrolysate with an incubation time of 10 minutes with a value of 38%. Based on the AAI value, the antioxidant activity of pea hydrolysate is still classified as a weak antioxidant because the AAI value is <0.5, namely 0.103. Hemolysis test results showed that the percentage of pea protein hydrolysate was 7%.

**Keywords:** antioxidant, *B. subtilis*, hydrolysis, peas, protease enzyme

