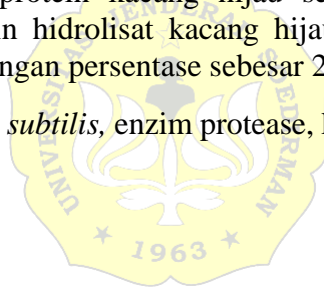


ABSTRAK

Kacang hijau termasuk sumber protein nabati yang memiliki kadar protein cukup tinggi yaitu sekitar 21-24%, sehingga berpotensi sebagai sumber peptida bioaktif dengan aktivitas antioksidan alami. Produksi peptida bioaktif dapat diperoleh melalui hidrolisis protein kacang hijau secara enzimatis menggunakan enzim protease dari bakteri *Bacillus subtilis* B298. Tujuan dari penelitian ini adalah mengetahui aktivitas antioksidan dari protein hidrolisat hasil hidrolisis protein kacang hijau oleh ekstrak kasar enzim protease *B. subtilis* B298. Tahap penelitian adalah produksi isolat protein kacang hijau dan produksi ekstrak kasar enzim protease *B. subtilis* B298 serta karakterisasi enzim yang meliputi suhu dan pH. Hidrolisis protein dilakukan pada kondisi optimum dengan variasi waktu 10, 20, 30, 40, 50, dan 60 menit. Aktivitas antioksidan protein hidrolisat dilakukan dengan metode DPPH dan dilakukan uji hemolisis. Hasil penelitian menunjukkan bahwa aktivitas spesifik enzim sebesar 0,013 U/mg yang bekerja pada suhu optimum 45 °C dan pH optimum 7. Hidrolisis tertinggi tercapai pada waktu inkubasi 60 menit dengan persentase derajat hidrolisis sebesar 17%. Persentase inhibisi tertinggi terhadap radikal DPPH terjadi pada waktu inkubasi 10 menit. Nilai AAI yang diperoleh pada hidrolisat protein kacang hijau sebesar 0,065. Uji hemolisis menunjukkan bahwa protein hidrolisat kacang hijau menyebabkan sedikit lisis terhadap sel darah merah dengan persentase sebesar 2%.

Kata kunci: antioksidan, *B. subtilis*, enzim protease, kacang hijau, protein hidrolisat



ABSTRACT

Mung beans is a source of vegetable protein with a high protein content of approximately 21-24%, they have the potential to be a source of bioactive peptides with natural antioxidant activity. Bioactive peptides can be produced through enzymatic hydrolysis of mung bean protein using protease enzymes from *Bacillus subtilis B298*. The purpose of this study was to determine the antioxidant activity of protein hydrolysate from mung bean protein hydrolysis using a crude extract of the protease enzyme *B. subtilis B298*. The research stages were the production of mung bean protein isolate and crude extract of protease enzyme *B. subtilis B298*, as well as enzyme characterization, including temperature and pH. Protein hydrolysis was performed under optimum conditions with time variations of 10, 20, 30, 40, 50, and 60 min. The antioxidant activity of the protein hydrolysate was determined using the DPPH method and a hemolysis test was conducted. The results showed that the specific activity of the enzyme was 0.013 U/mg, which worked at an optimum temperature of 45 °C and pH of 7. The highest hydrolysis was achieved at an incubation time of 60 min, with a percentage degree of hydrolysis of 17%. The highest percentage of DPPH radical inhibition was observed at an incubation time of 10 min. The AAI value obtained for the mung bean protein hydrolysate was 0.065. Hemolysis test showed that mung bean protein hydrolysate caused slight lysis of red blood cells with a percentage of 2%.

Keywords: antioxidant, *B. subtilis*, mung bean, protease enzyme, protein hydrolysate

