ABSTRAK

Urease merupakan enzim yang digunakan dalam hidrolisis urea menjadi amonia dan karbon dioksida. Urease banyak manfaatnya sehingga perlu dilakukan eksplorasi dan peningkatan efisiensinya. Tujuan penelitian ini adalah ekstraksi dan karakterisasi urease dari biji kacang hijau. Isolasi dimulai dengan cara perendaman biji kacang hijau kemudian dihaluskan menggunakan mortar kemudian disentrifugasi dalam keadaan dingin. Ekstrak kasar yang diperoleh kemudian dikarakterisasi meliputi pengaruh logam, pelarut organik, stabilitas suhu, waktu penyimpanan dan diuji aktivitasnya dengan metode Nessler dengan pengukuran menggunakan spektrofotometer dengan panjang gelombang 500 nm. Ion logam Ca^{2+}, Na^{+}, Pb^{2+}, Cd^{2+}, dan Cu^{2+} merupakan inhibitor bagi enzim urease pada konsentrasi 0,1 ppm dengan sisa aktivitas 98, 94, 86, 74, dan 67%. Aktivitas enzim urease dipengaruhi oleh pelarut organik berdasarkan kepolarannya, yaitu metanol > aseton > toluena dengan sisa aktivitas 59, 84, dan 94%. Hasil karakterisasi stabilitas enzim urease diperoleh aktivitas enzim urease dengan aktivitas awal 15,935 U/mL (100%) stabil pada suhu 35°C sampai waktu penyimpanan 150 menit dan mengalami penurunan aktivitas dengan sisa aktivitas 8,090 U/mL (54%). Ekstrak kasar enzim urease dapat disimpan selama 5 hari pada suhu 4°C dan suhu ruang (29°C) dengan sisa aktivitas 54% dan 42%.

Kata kunci : biji kacang hijau, karakterisasi, urease.

ABSTRACT

Urease is an enzyme that acts as a catalyst for the hydrolysis of urea to ammonia and carbon dioxide. Urease has many benefits so that it is necessary to explore and increase its efficiency. The objectives of this studied to extraction and characterization of urease enzym from mung bean. Isolation enzym urease from mung bean using a mortar and then centrifuging at cold temperature. The extract obtained was then characterized including the influence of metals, organik solvents, temperature stability, storage time and testing its activity using the Nessler method and measurement using a spectrophotometer with a wavelength of 500 nm. Metals ion Ca2+, Na+, Pb2+, Cd2+, and Cu2+ are inhibitors for the urease enzyme at concentration of 0.1 ppm with residual activities of 98, 94, 86, 74, and 67%. The activity of the urease enzyme was influenced by organic solvents based on their polarity, methanol > acetone > toluene with the remaining activities of 59, 84, and 94%. The results of the characterization of the stability of the urease enzyme showed that the activity of the urease enzyme with an initial activity of 15.935 U/mL (100%) was stable at a temperature of 35°C until a storage time of 150 minutes and decreased in activity with a residual activity of 8.090 U/mL (54%). The crude extract of urease enzyme can be stored for 5 days at 4°C and 29°C with the remaining activity of 54% and 42%, respectively.

Keywords : characterization, mung bean seeds, urease.