ABSTRAK

Enzim urease adalah enzim yang berfungsi sebagai katalis hidrolisis urea menjadi amonia dan karbondioksida. Perlu diketahui sifat-sifat dari enzim urease sehingga bisa diaplikasikan dalam bidang industri. Enzim urease yang digunakan pada penelitian ini adalah enzim yang diekstraksi dari biji pare. Enzim urease dikarakterisasi meliputi stabilitas suhu, pengaruh waktu penyimpanan, pengaruh pelarut organik, dan pengaruh logam. Karakteristik enzim urease ditentukan melalui uji aktivitasnya dengan metode Nessler dan pengukuran menggunakan spektrofotometer dengan panjang gelombang 500 nm. Hasil karakterisasi stabilitas enzim urease diperoleh aktivitas enzim urease stabil pada suhu 30°C, 35°C , dan 40°C sampai waktu penyimpanan 120 menit dengan sisa aktivitas relatif 47%, 50%, dan 48%. Ekstrak kasar enzim urease dapat disimpan selama 8 hari pada suhu 4°C dan 4 hari pada suhu ruang (29°C) dengan sisa aktivitas relatif 51% dan 50%. Aktivitas enzim urease dipengaruhi oleh pelarut organik berdasarkan kepolarannya, yaitu metanol > aseton > toluena pada perbandingan enzim : pelarut organik (9:1) dengan sisa aktivitas relatif 58%, 62%, dan 71%. Logam $CaCl_2$, $Pb(CH_3COO)_2$, NaCl, $CdSO_4$, dan $CuCl_2$ merupakan inhibitor bagi enzim urease pada konsentrasi 0,1 ppm dengan sisa aktivitas relatif 93%, 70%, 89%, 66%, dan 57%.

Kata kunci : biji pare, karakterisasi, urease

ABSTRACT

The urease enzyme is an enzyme that functions as a catalyst for the hydrolysis of urea into ammonia and carbon dioxide. It is necessary to know the properties of the urease enzyme so that it can be applied in the industrial sector. The urease enzyme used in this study was an enzyme extracted from bitter melon seeds. The urease enzyme was characterized including temperature stability, the effect of storage, the effect of organic solvents, and the effect of metals. The characteristics of the urease enzyme were determined by testing its activity using the Nessler method and measurement using a spectrophotometer with a wavelength of 500 nm. The stability of the urease enzyme showed that the activity of the urease enzyme was stable at temperature of 30°C, 35°C, and 40°C until storage time of 120 minutes with remaining relative activities of 47%, 50%, and 48%. The crude extract of urease enzyme can be stored for 10 days at 4°C and 4 days at room temperature (29°C) with the remaining activity of 51% and 50%, respectively. The activity of the urease enzyme was influenced by organic solvents based on their polarity, sequentially urease enzyme was most sensitive to methanol, acetone, toluene on the ratio of enzymes:organic solvents (9:1) with the remaining activities of 58%, 62%, and 71%. Metals $CaCl_2$, $Pb(CH_3COO)_2$, NaCl, $CdSO_4$, and $CuCl_2$ were inhibitors for the urease enzyme at concentration of 0.1 ppm with residual relative activities of 93%, 70%, 89%, 66%, and 57%.

***Keywords**: bitter melon seeds, characterization, urease*