ABSTRAK

Enzim urease merupakan enzim yang berperan dalam mengkatalisis reaksi hidrolisis urea menjadi amonia dan karbondioksida. Urease telah banyak diaplikasikan pada bidang industri dan kesehatan. Urease pada penelitian ini diekstraksi dari biji alpukat. Tujuan penelitian ini adalah melakukan ekstraksi enzim urease dari biji alpukat dan menentukan karakteristiknya. Karakterisasi ekstrak kasar urease meliputi penentuan pengaruh pH, suhu, konsentrasi substrat, waktu inkubasi, EDTA dan logam, serta pengaruh lama penyimpanan terhadap aktivitas enzim. Uji aktivitas enzim urease dilakukan menggunakan metode Nessler. Hasil karakterisasi enzim menunjukkan bahwa ekstrak kasar enzim urease memiliki aktivitas optimum pada bufer fosfat pH 7, suhu 35 °C, konsentrasi substrat 1500 ppm, dan waktu inkubasi selama 15 menit dengan aktivitas sebesar 97,83 unit/mL. Penambahan EDTA, ion logam berat Cu^{2+}, Ba^{2+}, dan Na^{+} pada konsentrasi 10^{-3} sampai 10^{-8} M menyebabkan penurunan aktivitas ekstrak kasar enzim urease. Semakin tinggi konsentrasi EDTA dan ion logam, semakin rendah aktivitas ekstrak kasar urease. Penyimpanan enzim dari hari ke 0 hingga hari ke 10 pada suhu ruang dan suhu 0,5 °C menyebabkan penurunan aktivitas enzim.

Kata kunci: Alpukat, metode Nessler, urease

ABSTRACT

The urease enzyme is one of the metalloenzymes that play a role in catalyzing the hydrolysis reaction of urea to ammonia and carbon dioxide. The urease enzyme in this study was extracted from avocado seeds. The purpose of this study is to extract urease enzymes from avocado seeds and determine their characteristics. Characterization of urease crude extract includes determination of optimum pH, optimum temperature, optimum substrate concentration, incubation time, effect of EDTA and metals ion in enzymes, and effect of enzyme storage time. The activity test and enzyme characterization were carried out using the Nessler method. The avocado seed crude extract showed urease activity of 97, 825 units / mL. The results of enzyme characterization showed that the crude extract of the urease enzyme had optimum activity in phosphate bufer pH 7, temperatur 35 ° C, substrate concentration 1500 ppm, and incubation time for 15 minutes. The addition of EDTA, Cu^{2+}, Ba^{2+}, and Na^{+} metal ions at concentrations of 10^{-8} to 10^{-3} M caused a decrease in the crude extract activity of the urease enzyme. The higher the concentration of EDTA and metal ions, the lower the crude urease extract activity. Storage of enzymes from day 0 to day 10 at room and 0,5 °C causes a decrease in enzymes activity.

Keyword: Avocado, Nessler Method, Urease