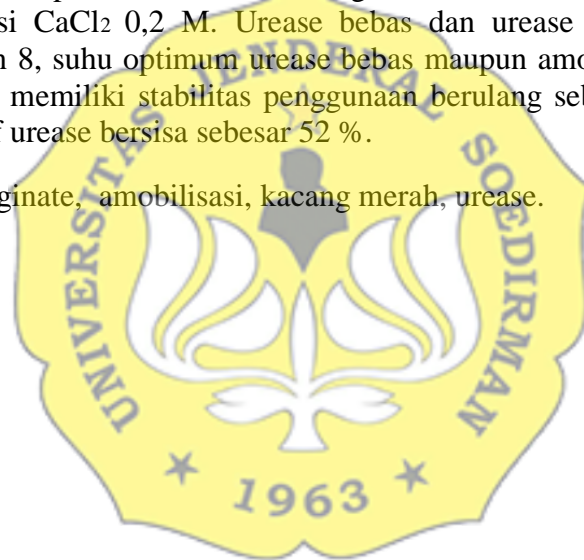


ABSTRAK

Urease telah banyak dimanfaatkan di dalam dunia industri. Urease biasanya digunakan dalam bentuk enzim bebas yang hanya bisa dipakai sekali sehingga kurang efektif karena biaya untuk produksi enzim relatif mahal. Masalah ini dapat diatasi dengan cara amobilisasi enzim sehingga dapat digunakan berulang. Penelitian ini, urease diekstrak dari biji kacang merah menggunakan bufer fosfat pH 7 agar urease terjaga pada pH netral, kemudian ekstrak kasar yang didapat diamobilisasi menggunakan Ca-alginat dengan variasi konsentrasi Na-alginat, waktu perendaman dan konsentrasi CaCl_2 dengan metode penjebakan. Ekstrak kasar urease bebas dan amobil selanjutnya dikarakterisasi meliputi pH, suhu dan stabilitas penggunaan berulang untuk urease amobil. Aktivitas urease ditentukan menggunakan metode Nessler. Hasil penelitian menunjukkan kondisi amobilisasi urease dari biji kacang merah dengan matriks Ca-alginat memiliki aktivitas optimum pada konsentrasi Na-alginat 5 %, waktu perendaman 60 menit dan konsentrasi CaCl_2 0,2 M. Urease bebas dan urease amobil memiliki pH optimum 7 dan 8, suhu optimum urease bebas maupun amobil yaitu suhu 35 °C. Urease amobil memiliki stabilitas penggunaan berulang sebanyak 5 kali dengan aktivitas relatif urease bersisa sebesar 52 %.

Kata kunci: alginate, amobilisasi, kacang merah, urease.



ABSTRACT

Urease has been widely used in the industrial world. Urease is usually used in the form of a free enzyme that can only be used once so that it is less effective because the cost of producing enzymes is relatively expensive. This problem can be overcome by immobilizing the enzyme so that it can be used repeatedly. This study, urease extracted from red bean seeds using phosphate buffer pH 7 so that urease was maintained at neutral pH, then the crude extract obtained was immobilized using Ca-alginate with variations in Na-alginate concentration, immersion time and CaCl₂ concentration by entrapment method. The crude and immobilized urease extracts were further characterized including pH, temperature and the stability of repeated use for immobilized urease. Urea activity was determined using the Nessler method. The results showed that the immobilization condition of urease from red bean seeds with Ca-alginate matrix had optimum activity at 5% Na-alginate concentration, 60 minutes immersion time and 0.2 M. CaCl₂ concentration. Free urease and immobilized urease had optimum pH 7 and 8, the optimum free or immobilized urease temperature is 35 °C. Immobilized urease has a repeated use stability of 5 times with a residual relative activity of urease of 52%.

Keywords: alginate, immobilization, red beans, urease.

