Isolasi, Karakterisasi dan Amobilisasi Enzim *Amilase* dari Temulawak (*Curcuma xanthorrhiza* Roxb.)

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Abstrak

Enzim *amilase* merupakan enzim yang mengkatalisis reaksi hidrolisis pati menjadi gula-gula sederhana. Temulawak merupakan salah satu tanaman obat yang banyak tersebar di Indonesia. Karbohidrat merupakan komponen kimia terbesar dari rimpang temulawak. Penelitian ini bertujuan untuk mengisolasi, mengkarakterisasi dan mengamobilisasi enzim *amilase* dari temulawak sehingga diperoleh sumber alternatif baru enzim *amilase*. Pengujian aktivitas enzim *amilase* dilakukan dengan menggunakan metode Fenol, sedangkan kadar protein berdasarkan metode Lowry. Perbandingan antara unit aktivitas enzim dan kadar protein total disebut aktivitas spesifik. Hasil penelitian dapat disimpulkan bahwa enzim *amilase* dapat di isolasi dari temulawak. Hasil karakterisasi diperoleh bahwa kondisi optimum aktivitas spesifik enzim *amilase* dari temulawak dengan substrat amilum pada suhu 35 ºC, waktu inkubasi 30 menit, dan pH = 6,1. Aktivitas spesifik tertinggi pada kondisi tersebut didapatkan pada fraksi F_4 (60 – 80 %), yaitu 14,844 Unit/mg protein dengan tingkat kemurnian 14,017. Setelah diamobilisasi enzim *amilase* amobil dengan agar-agar masih mempunyai aktivitas sampai 3 kali pemakaian, sedangkan enzim *amilase* amobil dengan karragenan mempunyai aktivitas sampai 2 kali pemakaian.
Kata kunci: Amilase, Temulawak, Fenol, Lowry

Isolation, Characterization and Immobilized of Amylase Enzyme from Temulawak (*Curcuma xanthorrhiza* Roxb.)

Abstract

A*mylase* enzyme is an enzyme catalyzed hydrolysis reaction of starch to simple sugar. This enzyme commonly can be isolated from plants and mammalia tissue, also from microbe cells. Temulawak is a herbal medicine that widely spreads in Indonesia. The carbohydrate is a mostly chemical component from temulawak. The purpose of this research is to isolate, characterization and immobilized of amylase enzyme from temulawak, therefore it will get new alternative enzyme of amylase. The activity of *amylase* was determined by Phenol method, and the protein was measured by Lowry method. The comparison between unit activity and concentration of total protein was specific activity. The result of research concluded that amylase enzyme could be isolated from the temulawak. The characterization resulted the optimum condition of the specific activity of amylase enzyme from temulawak with substrate of amylum at temperature of 35 ºC, incubation time of 30 minutes, and pH = 6.1 The higher specific activity in that condition was F_4 (60 – 80 %), with specific activity was 14.844 Unit/mg protein and purified degree of 14.017. After the immobilization, *amylase* enzyme with gelatine still have activity until three time of uses, while the *amylase* enzyme with carragenan have activity until twice uses.
Keywords: Amylase, Temulawak, Phenol, Lowry