

## ABSTRAK

**PUTRI N. A., 2021, UJI AKTIVITAS DAN PENENTUAN SUBSTRAT OPTIMUM EKSTRAK KASAR ENZIM AMILASE DAN PROTEASE DARI BAKTERI *Bacillus cereus*, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.**

Beberapa enzim ekstraseluler yang paling banyak dibutuhkan adalah protease dan amilase. Enzim ekstraseluler seperti protease dan amilase diketahui dapat dihasilkan dari bakteri genus *Bacillus* salah satunya *Bacillus cereus*. Salah satu faktor yang mempengaruhi aktivitas enzim adalah konsentrasi substrat. Penelitian ini bertujuan untuk mengetahui konsentrasi substrat optimum aktivitas ekstrak enzim protease dan amilase pada bakteri *Bacillus cereus* hasil isolasi dari air hutan mangrove.

Metode penelitian ini menggunakan metode eksperimental. Metode Bergmeyer dan Grassl digunakan untuk uji aktivitas ekstrak enzim protease. Menggunakan variasi konsentrasi substrat kasein sebesar 1%; 1,5%; dan 2%. Metode Bailey digunakan untuk uji aktivitas ekstrak enzim amilase. Menggunakan variasi konsentrasi substrat amilum sebesar 1%; 1,25%; dan 1,5%.

Hasil menunjukkan aktivitas ekstrak enzim protease pada variasi konsentrasi substrat kasein berturut - turut sebesar  $164,52 \times 10^{-3}$  U/mL;  $435,15 \times 10^{-3}$  U/mL;  $638,88 \times 10^{-3}$  U/mL. Konsentrasi substrat kasein optimum terdapat pada konsentrasi 2% ( $638,88 \times 10^{-3}$  U/mL). Aktivitas ekstrak enzim amilase pada variasi konsentrasi substrat amilum berturut - turut sebesar  $25,70 \times 10^{-3}$  U/mL;  $42,47 \times 10^{-3}$  U/mL;  $61,98 \times 10^{-3}$  U/mL. Konsentrasi substrat amilum optimum terdapat pada konsentrasi 1,5% ( $61,98 \times 10^{-3}$  U/mL).

---

Kata Kunci: *Bacillus cereus*, protease, amilase, aktivitas enzim

## ABSTRACT

**PUTRI N. A., 2021, ACTIVITY TEST AND DETERMINATION OF OPTIMUM SUBSTRATE EXTRACTS OF CRUDE AMYLASE AND PROTEASE ENZYMES FROM *Bacillus cereus* BACTERIA, ESSAY, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA.**

Some of the most needed extracellular enzymes are proteases and amylase. Extracellular enzymes such as proteases and amylase are known to be produced from bacteria of the genus *Bacillus*, one of which is *Bacillus cereus*. One of the factors that affect enzyme activity is substrate concentration. This research aims to determine the optimum substrate concentration of protease and amylase enzyme extract activity in *Bacillus cereus* bacteria isolated from mangrove forest water.

This research method uses an experimental method. Protease crude enzyme extract was testing the activity using Bergmeyer and Grassl's method. We were using a casein as a substrate with various concentrations of 1%; 1,5%; and 2%. The extract of amylase crude enzyme was testing the activity using Bailey's method. We were using a starch soluble as a substrate with various concentrations of 1%; 1,25%; and 1,5%.

The results showed that the activity of the protease crude enzyme extract at various concentrations of casein substrates was  $164.52 \times 10^{-3}$  U/mL;  $435.15 \times 10^{-3}$  U/mL;  $638.88 \times 10^{-3}$  U/mL, respectively. The optimum concentration of casein substrate was occurring at a concentration of 2% ( $638.88 \times 10^{-3}$  U/mL). The activity of the amylase crude enzyme extract on the variation of starch substrate concentration was  $25.70 \times 10^{-3}$  U/mL;  $42.47 \times 10^{-3}$  U/mL;  $61.98 \times 10^{-3}$  U/mL, respectively. The optimum starch soluble substrate concentration was at a concentration of 1.5% ( $61.98 \times 10^{-3}$  U/mL).

---

Keyword: *Bacillus cereus*, protease, amylase, enzyme activity