

ABSTRAK

SUSILOWATI, P.A., 2021, UJI AKTIVITAS FIBRINOLITIK DARI EKSTRAK KASAR ENZIM BAKTERI *Bacillus altitudinis* MENGGUNAKAN METODE *Plate Fibrin*, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Enzim fibrinolitik adalah protease yang mampu mendegradasi fibrin. Enzim fibrinolitik salah satunya berasal dari bakteri *Bacillus*. Tanah hutan mangrove terdapat bakteri *Bacillus altitudinis* setelah dilakukan isolasi. Tujuan penelitian ini adalah untuk mengetahui aktivitas fibrinolitik dari ekstrak kasar enzim *Bacillus altitudinis* dalam melisis fibrin yang berasal dari tanah hutan mangrove.

Penelitian ini diawali dengan identifikasi gen pengkode fibrinolitik dengan NCBI lalu identifikasi bakteri *Bacillus altitudinis* pada media agar darah, pewarnaan Gram, endospora, uji katalase dan uji koagulase. Produksi ekstrak kasar protein bakteri dilakukan dengan sentrifugasi selanjutnya pemecahan sel dengan sonikasi. Pengukuran kadar protein dengan metode *Bradford* serta uji aktivitas fibrinolitik dengan metode *plate fibrin*. Konsentrasi 20, 40, dan 80% ekstrak kasar enzim *Bacillus altitudinis*, nattokinase sebagai kontrol positif, sedangkan aquadest sebagai kontrol negatif. Data yang diperoleh dianalisis statistik menggunakan *One Way Anova*.

Bakteri *Bacillus altitudinis* terdapat gen *AprE* mengkode fibrinolitik. Bakteri *Bacillus altitudinis* memiliki aktivitas beta hemolisis, Gram positif, membentuk endospora, memiliki enzim katalase dan koagulase. Ekstraksi enzim diperoleh hasil 4,5 mL. Kadar protein total ekstrak kasar enzim fibrinolitik *Bacillus altitudinis* adalah 22,908 mg/mL. Konsentrasi yang terbaik pada ekstrak kasar enzim *Bacillus altitudinis* dalam melisis fibrin adalah konsentrasi 80% dengan zona bening 7,92 mm.

Kata kunci : *Bacillus altitudinis*, fibrinolitik, *plate fibrin*, nattokinase, *bradford*

ABSTRACT

SUSILOWATI, P.A., 2021, ACTIVITY TEST OF FIBRINOLYTIC ENZYME EXTRACT OF BACTERIA *Bacillus altitudinis* USING *Plate Fibrin* METHOD, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Fibrinolytic enzymes are proteases capable of degrading fibrin. One of the fibrinolytic enzymes is derived from *Bacillus* bacteria. Mangrove forest soil contained *Bacillus altitudinis* bacteria after isolation. The purpose of this study was to determine the fibrinolytic activity of the crude extract of the enzyme *Bacillus altitudinis* in lysing fibrin from mangrove forest soil.

This study begins with identification of the gene encoding fibrinolytic with NCBI then identification of *Bacillus altitudinis* bacteria on blood agar media, Gram staining, endospores, catalase test and coagulase test. Production of bacterial protein crude extract was carried out by centrifugation followed by cell breakdown by sonication. Measurement of protein levels using the *Bradford* method and the fibrinolytic activity test using the *fibrin plate* method. Concentrations of 20, 40, and 80% crude extract of the enzyme *Bacillus altitudinis*, nattokinase as a positive control, while aquadest as a negative control. The data obtained were statistically analyzed using *One Way Anova*.

The bacterium *Bacillus altitudinis* contains the AprE gene encoding fibrinolytic. *Bacillus altitudinis* bacteria have beta hemolysis activity, are Gram positive, form endospores, have catalase and coagulase enzymes. Enzyme extraction yields 4.5 mL. The total protein content of the crude extract of the fibrinolytic enzyme *Bacillus altitudinis* was 22,908 mg/mL. The best concentration of crude extract of *Bacillus altitudinis* enzyme in lysing fibrin was 80% concentration with a clear zone of 7.92 mm.

Keywords : *Bacillus altitudinis*, fibrinolytic, *plate fibrin*, nattokinase, *bradford*