

## ABSTRAK

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### **UJI AKTIVITAS TROMBOLITIK DARI EKSTRAK BUAH NANAS (ANANAS COMOSUS)**

Skripsi, Fakultas Sains dan Teknologi (2023).

(xv + 26 halaman; 7 gambar; 1 tabel; 1 lampiran)

Pada tahun 2030, telah di estimasi tingkat prevelensi penyakit kardiovaskular akan naik menjadi 1,845 per 100,000 dari populasi dari 1,655. Usia dan jenis kelamin merupakan faktor risiko penyakit kardiovaskular. Penyakit kardiovaskular disebabkan oleh hemostasis yang mengganggu peredaran darah. Buah nanas (*Ananas comosus*) terkenal dengan enzim protease bromelin yang memiliki kemampuan antitrombotik dan fibrinolitik. Oleh karena itu, dilakukan serangkaian pengujian untuk mengevaluasi kemampuan aktivitas trombolitik dari ekstrak buah nanas. Berdasarkan hasil dari uji degradasi gumpalan darah, nilai presentase degradasi enzim bromelin adalah 99.29 %. Berdasarkan hasil uji degradasi gumpalan *euglobulin*, dapat dilihat bromelin berhasil mendegradasi *euglobulin* melalui observasi visual. Hasil tersebut didukung dengan campuran sampel dan gumpalan *euglobulin* yang menjadi keruh dan hasil spektrofotometri yang menunjukkan *peak* pada panjang gelombang 280 nm. Nilai absorbansi 280 nm dari jam ke-1 sampai ke-2 berkurang diduga karena campuran sampel dan gumpalan *euglobulin* sudah mencapai  $V_{maks}$ . Uji SDS-PAGE berhasil menemukan *band* bromelin (31 kDa) dan hasil potongan dari plasminogen (92 kDa) yang berupa protein komplemen C3b dengan berat molekul  $\alpha'$ 56,8,  $\alpha'$ 43,1 dan  $\alpha'$ 16 berhasil diidentifikasi pada uji SDS-PAGE. Dengan demikian, enzim dari buah *A. comosus* berhasil dikonfirmasi memiliki kemampuan trombolitik dan aktivitas fibrinolitik.

**Kata kunci** : Trombolitik, Kardiovaskular, fibrinolitik, bromelin, *Ananas comosus*, degradasi gumpalan darah, degradasi gumpalan *euglobulin*, plasminogen, spektrofotometri,  $V_{maks}$  dan SDS-PAGE.

**Referensi** : 26 (1987-2021).

## ABSTRACT

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### **THROMBOLYTIC ACTIVITY TEST OF PINEAPPLE EXTRACT (ANANAS COMOSUS)**

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(xv + 26 pages; 7 figures; 1 table; 1 appendix)

In the year 2030, it is estimated that the prevalence of cardiovascular disease will rise from 1,655 per 100,000 of the population to 1,845. Age and gender are some of the risk factors of cardiovascular disease. Cardiovascular disease is caused by hemostasis that disturbs the blood flow. Pineapple fruit (*Ananas comosus*) is known for protease protein bromelain that has an antibiotic and fibrinolytic activity. Therefore, a series of tests were carried out to evaluate the ability and efficacy of fruit bromelain. Based on the result, bromelain has percentage value of 99.29 % on the degradation proportion of red blood cells. This result is further supported by bromelain's ability to lyse euglobulin resulting in cloudy mixture. suspected to be the byproduct of lysed euglobulin. Result of spectrophotometer analysis shows peak absorbance at wavelength of 280 nm. However, the absorbance value of the second hour of incubated samples went down. This is suspected due to the mixture of enzyme and substrate having reached Vmax. The result of SDS-PAGE analysis shows bromelain protein band on lane 3 and 4 with the molecular weight of 31 kDa. Lane 4 also shows that bromelain can cleave plasminogen (92 kDa) with the lane shows alpha chains from C3b protein by products which have molecular weight of  $\alpha$ '56,8,  $\alpha$ '43,1 dan  $\alpha$ '16 respectively. Thus, it is concluded that fruit bromelain from *A. comosus* can exhibit thrombolytic and fibrinolytic activity. Thus, it is concluded that fruit bromelain from *A. comosus* can exhibit thrombolytic and fibrinolytic activity.

**Keywords** : Thrombolytic Cardiovascular, fibrinolytic, bromelain, *Ananas comosus*, whole blood clot lysis test, euglobulin clot lysis test, plasminogen, spectrophotometry, Vmax and SDS-PAGE.

**Reference** : 26 (1987-2021).