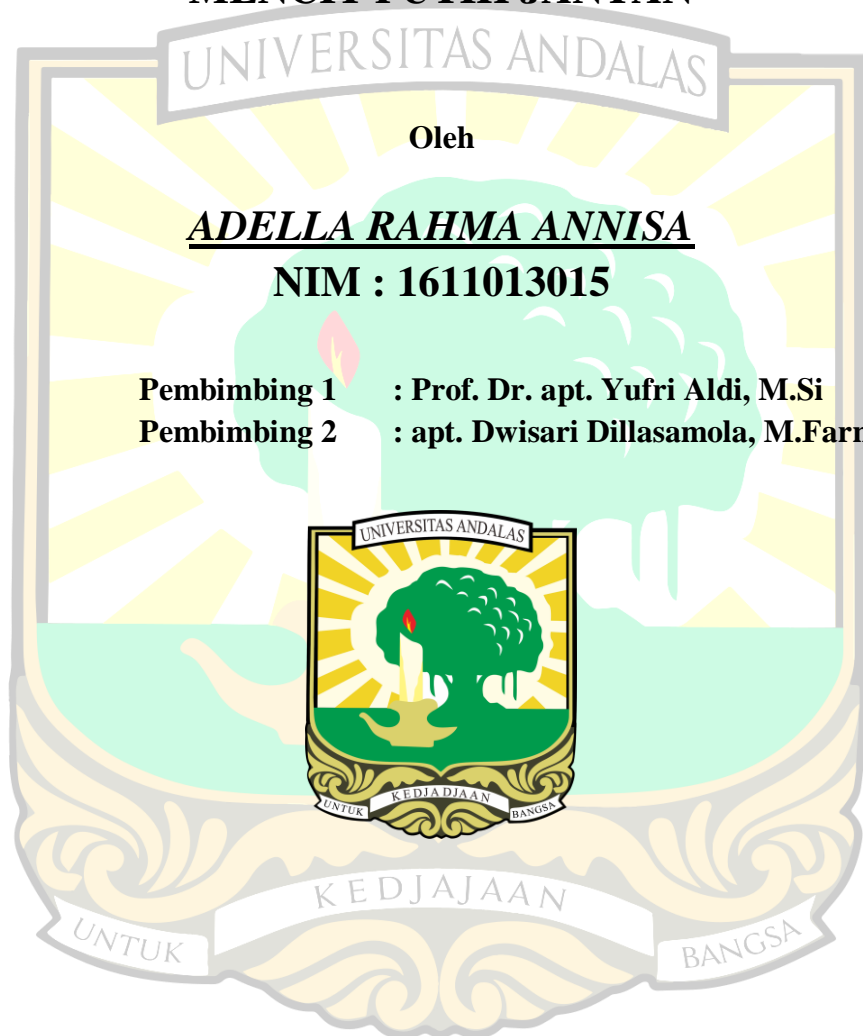


**SKRIPSI SARJANA FARMASI**

**UJI EFEK ENZIM BROMELIN TERHADAP  
AKTIVITAS DAN KAPASITAS FAGOSITOSIS SEL  
MAKROFAG DAN PERSENTASE SEL LEUKOSIT  
MENCIT PUTIH JANTAN**



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## ABSTRAK

# UJI EFEK ENZIM BROMELIN TERHADAP AKTIVITAS DAN KAPASITAS FAGOSITOSIS SEL MAKROFAG DAN PERSENTASE SEL LEUKOSIT MENCIT PUTIH JANTAN

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Enzim bromelin merupakan enzim hasil ekstrak dari tanaman nanas (*Ananas comosus*. L) yang memiliki khasiat tradisional yaitu dapat meningkatkan sistem imun. Penelitian ini bertujuan untuk melihat efek enzim bromelin terhadap aktivitas dan kapasitas fagositosis sel makrofag, total dan persentase sel leukosit mencit putih jantan. Hewan coba dibagi menjadi lima kelompok, masing-masing kelompok terdiri dari 5 ekor yaitu kelompok kontrol positif Na CMC 0,5%, kelompok II enzim bromelin 50 mg/kgbb, kelompok III enzim bromelin 100 mg/kgbb, IV bromelin 200 mg/kgbb dan kelompok pembanding obat stimuno 50 mg/kgbb. Sediaan uji dan stimuno diberikan peroral selama tujuh hari berturut-turut. Pada hari kedelapan, ditentukan aktivitas dan kapasitas sel makrofag peritoneal, jumlah total dan persentase leukosit. Penentuan jumlah total dan persentase leukosit langsung dihitung dengan mengambil darah dari vena ekor. Setelah pengambilan darah, semua hewan coba diberi suspensi *Staphylococcus aureus* R. 0,5 mL secara peritoneal. Hasil penelitian menunjukkan bahwa pemberian enzim bromelin pada dosis 200 mg/kgbb dapat meningkatkan aktivitas fagositosis makrofag 72,6%, kapasitas fagositosis menunjukkan hasil 99,0 sel, total leukosit menunjukkan hasil 8100/ $\mu$ L darah. Pada persentase sel leukosit, pemberian enzim bromelin dapat menurunkan jumlah sel neutrofil segmen dan sel monosit. Hasil analisa statistik ANOVA satu arah dan uji lanjut Duncan, variasi konsentrasi menunjukkan perbedaan signifikan ( $p < 0,05$ ) terhadap aktivitas, kapasitas sel makrofag dan jumlah total sel leukosit. Pada persentase sel leukosit menunjukkan bahwa neutrofil segmen dan monosit memiliki perbedaan signifikan ( $p < 0,05$ ). Dari analisa di atas dapat disimpulkan bahwa pemberian enzim bromelin dosis 50, 100 dan 200 mg/kgbb dapat meningkatkan aktivitas, kapasitas sel makrofag dan jumlah total leukosit mencit putih jantan sedangkan pada persentase sel leukosit, neutrofil segmen dan monosit mengalami penurunan.

Kata kunci : Enzim Bromelin, aktivitas fagositosis, kapasitas fagositosis, makrofag, leukosit

## ABSTRACT

### THE EFFECT OF BROMELAIN ON MACROPHAGE'S PHAGOCYTOSIS ACTIVITY AND CAPACITY AND THE PERCENTAGE OF LEUCOCYTE IN MALE WHITE MICE

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Bromelain is an enzyme extracted from the pineapple (*Ananas comosus*. L) that is traditionally used to enhance the immune system. This study use determine the effect of bromelain on phagocytosis activity and capacity of macrophage and the percentage of leucocytes in male white mice. The experiment consisted of animals divided into five groups whereby each group consists of five white mice. The groups are the positive control group Na CMC 0,5%, group II bromelain 50 mg/kgbb, group III bromelain 100 mg/kgbb, group IV bromelain 200 mg/kgbb, and positive control group *Stimuno* 50 mg/kgbb. The bromelain suspension and *Stimuno* were given orally for 7 consecutive days. On the 8<sup>th</sup> day, the peritoneal macrophage's activity and capacity and the percentage of leucocyte were determined. The total and percentage of leucocyte were determined through the blood sample taken intravenally. After collecting the blood samples, the groups were given 0,5 ml of *Staphylococcus aureus* R. suspension peritoneally. The results showed that administration of bromelain at dose 200 mg/kgbb can increase the phagocytic activity of macrophages by 72,6%, the phagocytosis capacity were 99,0 cells, and the total leucocyte were 8100/ $\mu$ L blood respectively. The percentage of leukocytes cells can decrease of segmen neutrophils and monocyte cells. The. One-Way ANOVA and Duncan Multiple Range Test show significant influence of concentration ( $p < 0,05$ ) towards activity and capacity of macrophage and total number of lymphocytes. Segmented neutrophils and monocytes show significant influence ( $p < 0,05$ ) towards percentage of leucocytes. This indicated administration of bromelain at doses of 50, 100 and 200 mg/kgbb can increase activity and capacity of macrophages and increase total leucocyte but decrease the percentage of leucocytes, segmented neutrophils and monocytes in white male mice.

Keywords: Bromelain, phagocytosis activity, phagocytosis capacity, macrophages, leucocytes