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Pemurnian parsial enzim bromelain dari bonggol nanas (ananas comosus [l] merr), serta uji in-vitro sebagai agen antiplatelet = Partial purification of bromelin from core pineapple (ananas comosus [l] merr), as well as in vitro test as antiplatelet agents

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Abstrak

ABSTRAK
Penelitian ini bertujuan untuk mengisolasi dan memurnikan enzim bromelain dari bonggol nanas (Ananas comosus [L] Merr.) disertai pengujian aktivitasnya sebagai agen antiplatelet. Tahap pemurnian dimulai dari isolasi, fraksinasi bertingkat menggunakan etanol, kromatografi penukar ion dengan DEAE-Selulosa, dan kromatografi filtrasi gel dengan Sephadex G-50. Tiap tahap pemurnian menghasilkan peningkatan aktivitas spesifik pada fraksi enzim, mulai dari ekstrak kasar berturut-turut sebesar 0,0052 Unit/mg; 4,6480 Unit/mg; 9,0306 Unit/mg; dan 11,8421 Unit/mg. Fraksi enzim yang telah melewati tahap kromatografi penukar ion dan filtrasi gel menunjukkan tingkat kemurnian tertinggi, yaitu 2277 kali dibanding ekstrak kasarnya. Hasil uji aktivitas antiplatelet terhadap seluruh fraksi enzim membuktikan bahwa bromelain berpengaruh pada proses agregasi platelet. Fraksi enzim hasil pemurnian pun menunjukkan aktivitas terbesar sebagai agen antiplatelet, yaitu memberikan nilai persentase agregasi platelet sebesar 64,04% dan nilai persentase inhibisi sebesar 31,25%. Uji stabilitas enzim menunjukkan bahwa enzim bromelain dari bonggol nanas mengalami penurunan aktivitas proteolitik sebesar 0,2315 Unit/mL per hari selama proses penyimpanan, dan dapat mengalami inaktivasi pada pemanasan suhu 80°C.
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ABSTRAK
This study aimed to isolate and purify the bromelain enzyme from pineapple core (Ananas comosus [L] Merr.), accompanied by testing that activity as a antiplatelet agents. Purification stages starting from the isolation, fractionation storied using ethanol, ion exchange chromatography with DEAE-Cellulose and gel filtration chromatography with Sephadex G-50. Each stages of purification succeed increasing value of specific activity in an enzyme fraction, start from crude extract enzyme, respectively: 0.0052 Unit/mg; 4.6480 Unit/mg; 9.0306 Unit/mg; and 11.8421 Unit/mg. Enzyme fractions have passed the stage of ion chromatography and gel filtration show the highest level of purify (2277 fold compared to the crude extract). The results of antiplatelet activity on all factions proved that the enzyme bromelain giving effect on platelet aggregation process. The fraction was purified also show greatest activity as an antiplatelet agent, with the percentage of platelet aggregation values of 64.04% and a percentage inhibition value of 31.25%. Enzyme stability test showed that the enzyme bromelain from pineapple core decreased proteolytic activity of 0.2315 units / mL per day during the storage process, and can be inactivated on heating temperature of 80°C.