

SKRIPSI SARJANA FARMASI

**UJI AKTIVITAS EKSTRAK METANOL
DAUN MANGGA BACANG (*Mangifera foetida* L.) SEBAGAI INHIBITOR
ENZIM α -AMILASE**



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ABSTRAK

UJI AKTIVITAS EKSTRAK METANOL DAUN MANGGA BACANG (*Mangifera foetida* L.) SEBAGAI INHIBITOR ENZIM α -AMILASE

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Diabetes melitus merupakan suatu kondisi dimana kadar gula dalam darah meningkat karena produksi insulin yang tidak cukup atau insulin kurang sensitif terhadap gula. Peningkatan kadar gula darah setelah makan dipengaruhi oleh penyerapan monosakarida yang dihasilkan dari hidrolisis polisakarida oleh enzim α -amilase. Daun mangga bacang mengandung beberapa senyawa kimia di antaranya flavonoid, fenolik, dan mangiferin yang dapat menghambat proses hidrolisis karbohidrat oleh enzim α -amilase. Penelitian ini bertujuan untuk mengetahui aktivitas ekstrak metanol daun mangga bacang sebagai inhibitor enzim α -amilase serta menghitung nilai persen inhibisi dan IC_{50} nya. Metode *dinitrosalicylic acid* (DNS) digunakan untuk melakukan pengujian terhadap aktivitas enzim α -amilase dengan mengukur serapan produk enzim yang bereaksi dengan reagen DNS membentuk warna oranye gelap. Nilai rata-rata persen penghambatan oleh ekstrak metanol daun mangga bacang pada konsentrasi 100, 200, 300, 400, dan 500 $\mu\text{g/mL}$ secara berturut-turut adalah 16,71%, 19,41%, 25,33%, 28,68%, dan 31,72%. Nilai rata-rata IC_{50} ekstrak metanol daun mangga bacang dan kontrol positif larutan acarbose adalah 955,14 $\mu\text{g/mL}$ dan 102,11 $\mu\text{g/mL}$. Hasil analisis data secara statistik didapatkan adanya perbedaan bermakna antar kelompok konsentrasi uji terhadap persen inhibisi dengan nilai $p\text{-value} < 0,05$, dengan kata lain efektivitas penghambatan enzim α -amilase semakin meningkat dengan penambahan konsentrasi ekstrak metanol daun mangga bacang, namun masih kurang efektif dibandingkan dengan kontrol positif.

Kata kunci : ekstrak metanol daun mangga bacang, enzim α -amilase, DNS, inhibisi, *in vitro*

ABSTRACT

ACTIVITY OF BACANG MANGO LEAVES (*Mangifera foetida* L.) METHANOLIC EXTRACTS AS α -AMYLASE ENZYME INHIBITORS

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Diabetes mellitus is a condition in which blood sugar levels increase due to insufficient insulin production or insulin is less sensitive to sugar. The rising of blood sugar levels after eating is influenced by the absorption of monosaccharides resulting from the hydrolysis of polysaccharides by the α -amylase enzyme. Bacang mango leaves contain several chemical compounds including flavonoids, phenolics, and mangiferin which are responsible to inhibit the hydrolysis of carbohydrates by the α -amylase enzyme. The purpose of this study was to determine the activity of the methanolic extract of bacang mango leaves as an inhibitor of the α -amylase enzyme and to determine the inhibitory percent value and IC_{50} . The dinitrosalicylic acid (DNS) method was used to test the activity of the α -amylase enzyme by measuring the absorbance of the enzyme product that reacts with the DNS reagent to form a dark orange color. The average value of percent inhibition by methanolic extract of bacang mango leaves at concentrations 100, 200, 300, 400, and 500 $\mu\text{g/mL}$ were 16.71%, 19.41%, 25.33%, 28.68%, and 31.72%, respectively. The average IC_{50} value of the methanolic extract of bacang mango leaves and acarbose were 955.14 $\mu\text{g/mL}$ and 102.11 $\mu\text{g/mL}$. The results of statistical data analysis showed that there was a significant difference between the test concentration groups in the percentage of inhibition with p-value <0.05 , in other words the effectiveness of α -amylase inhibition increased with the addition of bacang mango leaves methanolic extract concentration, but it was still less effective compared to positive controls.

Keywords : bacang mango leaves methanolic extract, α -amylase enzyme, DNS, inhibition, in vitro