

# Potensi Ekstrak Daun Punica Granatum sebagai Agen Antihiperqlikemik pada Tikus Sprague Dawley yang Diinduksi Aloksan dan Pengaruhnya terhadap Histopatologi Jantung = The Potential of Punica granatum Leaf Extract as an Anti-hyperglycemic Agent on Alloxan-induced Sprague dawley and Its Effect on The Histopathology of The Heart

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## Abstrak

berkembang semakin masif setiap tahunnya dengan risiko komplikasi, di antaranya berupa kardiomiopati. Pengobatan tradisional berupa daun delima (*Punica granatum*) dapat menjadi alternatif bagi pengobatan konvensional diabetes mellitus. Tujuan: Mengetahui potensi ekstrak daun delima sebagai agen antihiperqlikemik dan kardioprotektif.

Metode: Penelitian dilakukan terhadap 20 tikus Sprague dawley diabetes yang sebelumnya telah diinduksi menggunakan aloksan, dan 4 tikus normal. Tikus tersebut dikelompokkan dalam 6 kelompok, yaitu kelompok normal, kontrol positif, kontrol negatif, dan 3 kelompok perlakuan yang masing-masing diberikan ekstrak dosis 200

mg/kg berat badan (BB), 400 mg/kgBB, dan 600 mg/kgBB. Pengukuran gula darah puasa (GDP) dilakukan sebelum perlakuan dan setiap 4 hari selama perlakuan berlangsung, selama 16 hari. Setelah perlakuan, dilakukan uji histopatologi teknik pewarnaan hematoksilin-eosin terhadap jantung tikus. Hasil: Kelompok perlakuan dengan pemberian dosis ekstrak 400 mg/kgBB dan 600 mg/kgBB menunjukkan penurunan GDP tikus yang signifikan jika dibandingkan dengan kontrol negatif. Dosis 600 mg/kgBB merupakan dosis yang dinilai paling efektif. Uji

histopatologi menunjukkan kardiomiopati pada kelompok kontrol negatif dan kelompok perlakuan dengan dosis 200 mg/kgBB dan 400 mg/kgBB, sementara kelompok normal, kontrol positif, dan perlakuan dengan dosis 600 mg/kgBB tidak menunjukkan kelainan

spesifik. Kesimpulan: Ekstrak daun delima menunjukkan efek antihiperqlikemik dan kardioprotektif melalui uji In Vivo. Dosis efektif ekstrak daun delima adalah 600 mg/kgBB.

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Background: Diabetes mellitus is a global health problem that is developing massively every year with risks of complications, one of which is cardiomyopathy. Traditional remedies such as pomegranate (*Punica granatum*) leaf can be an alternative to conventional treatment of diabetes mellitus. Objective: To study the potential of pomegranate leaf extract as antihyperglycemic and cardioprotective agent.

Methods: This research was done to 20 alloxan-induced diabetic rats and 4 normal rats. Those rats are grouped into 6 groups, which includes normal group, positive control group, negative control group, and 3 groups treated with the extract by the dose of 200

mg/kg body weight (BW), 400 mg/kgBW, and 600 mg/kgBW. Measurements of fasting blood sugar (FBS) were done before the treatment, and every 4 days during the 16 days the research was conducted. After the treatments were given, histopathology test of hematoxylin-eosin staining was done to the hearts of the rats.

Results: The groups treated with the 400 mg/kgBW and 600 mg/kgBW dose extract showed significant decreases in FBS compared to the negative control group. The 600 mg/kgBW dose is considered as the most effective dose. Histopathology evaluation showed cardiomyopathy in the negative control group and the groups treated with 200 mg/kgBW and 400 mg/kgBW extract, while the normal group, positive control group, and the group treated with 600 mg/kgBW extract showed no specific disorder. Conclusion: The pomegranate leaf extract showed antihyperglycemic and cardioprotective effect through In Vivo experiment. The effective dose of pomegranate leaf extract is 600 mg/kgBW.