Potensi Ekstrak Daun Punica Granatum sebagai Agen Antihiperglikemik 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 antihiperglikemik 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 antihiperglikemik dan kardioprotektif melalui uji In Vivo. Dosis efektif esktrak daun delima adalah 600 mg/kgBB.

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 exctract 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.