Efek Ekstrak Etanol Kulit Batang Pulosari (Alyxia reinwardtii) pada Tikus yang Diinduksi Pakan Tinggi Lemak dan Streptozotocin Dosis Rendah Terhadap Parameter Fungsi Ginjal dan Stres Oksidatif = The Effect of Pulosari (Alyxia reinwardtii) Bark Ethanol Extract on Rats Induced by High Fat Diet and Low-Dose Streptozotocin on Kidney Function and Oxidative Stress Parameters

Syahilda Siti Jamadilla, author

Abstrak

Hiperglikemia menginduksi pembentukan spesies oksigen reaktif (ROS) yang dapat meningkatkan stres oksidatif pada patogenesis diabetes nefropati. Ekstrak etanol kulit batang pulosari (Alyxia reinwardtii) diketahui mengandung pulosariosida, skopoletin, flavonoid, alkaloid, tanin, dan saponin yang memiliki efek antidiabetes dan antioksidan. Penelitian ini dilakukan untuk mengetahui efek ekstrak etanol kulit batang pulosari pada tikus diabetes yang diinduksi oleh pakan tinggi lemak dan streptozotocin dosis rendah. Pada penelitian ini, 24 ekor tikus jantan galur Wistar dibagi menjadi enam kelompok (n = 4), yaitu kelompok normal (CMC Na 0,5%), kelompok negatif (induksi + CMC Na 0,5%), kelompok positif (induksi + Metformin 90 mg/200 g BB), kelompok dosis 1 (induksi + ekstrak 30 mg/200 g BB), dosis 2 (induksi + ekstrak 60 mg/200 g BB), dan dosis 3 (induksi + ekstrak 120 mg/200 g BB). Tikus diinduksi dengan pemberian pakan tinggi lemak yang mengandung 50% pakan standar, 20% tallow, 20% sukrosa, dan 10% mentega selama 28 hari. Kemudian, diberi injeksi streptozotocin 40 mg/kg BB dan nikotinamid 110 mg/kg BB sebanyak dua kali. Setelah kadar glukosa darah mencapai 280 mg/dL dan stabil selama 3 hari, dilanjutkan dengan pemberian ekstrak selama 21 hari. Parameter kreatinin, urea, 8-OHdG, dan MDA diukur saat sebelum dan sesudah pemberian ekstrak. Kadar kreatinin dan urea diukur menggunakan spektrofotometer UVVis, sedangkan kadar 8-OHdG dan MDA diukur menggunakan ELISA. Ekstrak pulosari secara signifikan dapat menurunkan kadar kreatinin, urea, 8-OHdG, dan MDA ($p < 0,05$) dan kemampuannya serupa dengan metformin.

.....Hyperglycemia induces the formation of reactive oxygen species (ROS) which can increase oxidative stress in the pathogenesis of diabetic nephropathy. The ethanol extract of pulosari (Alyxia reinwardtii) bark is known to contain pulosarioside, scopoletin, flavonoids, alkaloids, tannins, and saponins which have antidiabetic and antioxidant effects. This study was conducted to determine the effect of pulosari bark ethanol extract on diabetic rats induced by high-fat diet and low-dose streptozotocin. In this study, 24 male Wistar rats were divided into six groups (n = 4), namely the normal group (CMC Na 0.5%), negative group (induction + CMC Na 0.5%), positive group (induction + Metformin 90 mg/200 g BW), dose group 1 (induction + extract 30 mg/200 g BW), dose 2 (induction + extract 60 mg/200 g BW), and dose 3 (induction + extract 120 mg/200 g BW). Rats were induced by feeding high-fat diet containing 50% standar feed, 20% tallow, 20% sucrose, and 10% butter for 28 days. Then, given injection of streptozotocin 40 mg/kg BW and nicotinamide 110 mg/kg BW twice. After the blood glucose level reached 280 mg/dL and was stable for 3 days, then the extract is given for 21 days. Creatinine, urea, 8-OHdG, and MDA parameters were measured before and after administration of the extract. Creatinine and urea levels were measured using UV-Vis spectrophotometer, while 8-OHdG and MDA levels were measured using ELISA. Pulosari extract

significantly reduced creatinine, urea, 8-OHdG, and MDA levels ($p < 0.05$) and its ability is similar to metformin.