

ABSTRACT

The Effect of Ethanolic Extract of Turkey Berry (*Solanum torvum* Sw.) on Kidney Histopathology of Male White Rats (*Rattus norvegicus*) of *Sprague-Dawley* Strain with Alloxan-Induced Diabetes Mellitus

By

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Background: Alloxan is a commonly used diabetogenic agent that can cause kidney damage. This damage can be mitigated by the ethanolic extract of turkey berry (*Solanum torvum* Sw.), a medicinal plant containing active compounds with antioxidant properties.

Methods: The study employed a Posttest-Only Randomized Control Group design with 25 rats divided into five groups. All groups, except the normal control group (KN), were induced with alloxan at a dose of 140 mg/kgBW. Treatment group 1 (P1) received 100 mg/kgBW of ethanolic extract of turkey berry, treatment group 2 (P2) received 200 mg/kgBW, and treatment group 3 (P3) received 400 mg/kgBW of the same extract. The rats were terminated using cervical dislocation, followed by dissection and extraction of the kidney organs, which were then preserved in urine pots filled with formalin. The organs were processed into histological slides, observed under a microscope, and the average histopathological kidney damage was assessed. Data were analyzed using the Shapiro-Wilk normality test and Levene's homogeneity test, followed by One-Way ANOVA and Post Hoc Tukey HSD tests for parametric analysis.

Results: In the normal control group (KN), the average damage score was 0. In the negative control group (K-), the average damage score was 3.16. For treatment group 1 (P1), the average damage score was 2.68, while treatment group 2 (P2) had an average score of 2.2, and treatment group 3 (P3) had an average score of 1.68. The results were normally distributed and homogeneous, with significant differences observed among the groups.

Conclusion: The ethanolic extract of turkey berry (*Solanum torvum* Sw.) had an effect on reducing kidney histopathological damage in male white rats (*Rattus norvegicus*) of the *Sprague-Dawley* strain with alloxan-induced diabetes mellitus at a dose of 400 mg/kgBW. However, there was no significant effect of increasing the dose of the ethanolic extract of turkey berry (*Solanum torvum* Sw.) on further reducing kidney histopathological damage in these rats.

Keywords: *Solanum torvum* Sw., kidney, alloxan

ABSTRAK

EFEK EKSTRAK ETANOL BUAH TAKOKAK (*Solanum torvum* Sw.) TERHADAP HISTOPATOLOGI GINJAL TIKUS PUTIH JANTAN (*Rattus norvegicus*) GALUR *Sprague-Dawley* DIABETES MELITUS YANG DIINDUKSI ALOKSAN

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Latar Belakang: Aloksan adalah salah satu agen diabetogenik umum yang sering digunakan dan dapat menyebabkan kerusakan pada ginjal. Kerusakan tersebut dapat dicegah oleh ekstrak etanol buah takokak (*Solanum torvum* Sw.) sebagai tanaman obat yang terkandung senyawa aktif yang bekerja sebagai antioksidan.

Metode: Penelitian menggunakan *Posttest-only Randomized Control Group* pada tikus sebanyak 25 ekor yang terbagi menjadi 5 kelompok. Semua kelompok di induksi aloksan 140 mg/kgBB kecuali pada kelompok KN, lalu kelompok perlakuan 1 (P1) diberikan ekstrak etanol buah takokak 100mg/KgBB, kelompok perlakuan 2 (P2) diberikan ekstrak etanol buah takokak 200mg/KgBB dan kelompok perlakuan 3 (P3) diberikan ekstrak etanol buah takokak 200mg/KgBB. Tikus diterminasi menggunakan cara dislokasi leher. Setelah itu, dilakukan pembedahan dan pengambilan organ ginjal tikus yang kemudian dimasukkan kedalam pot urin yang sudah terisi formalin. Kemudian, organ tersebut dibuat sediaan preparat histologi lalu dilihat di mikroskop dan dihitung rerata kerusakan histopatologi ginjal tersebut. Data dianalisis menggunakan uji normalitas *Shapiro-Wilk* dan uji homogenitas *Levene's test*, dilanjutkan dengan uji parametrik *One Way Anova* dan uji *Pos Hoc Tukey HSD*.

Hasil: Pada kelompok kontrol normal (KN) didapatkan jumlah rerata kerusakan 0, K(-) didapatkan jumlah rerata kerusakan 3,16; P1 didapatkan jumlah rerata kerusakan 2,68; P2 didapatkan jumlah rerata kerusakan 2,2; P3 didapatkan jumlah rerata kerusakan 1,68. Hasil terdistribusi normal dan homogen dan terdapat perbedaan yang bermakna.

Simpulan: Terdapat pengaruh ekstrak etanol buah takokak (*Solanum torvum* Sw.) terhadap penurunan kerusakan histopatologi ginjal tikus putih jantan (*Rattus norvegicus*) galur *Sprague-Dawley* diabetes melitus yang diinduksi aloksan pada dosis 400mg/KgBB dan tidak terdapat pengaruh peningkatan dosis ekstrak etanol buah takokak (*Solanum torvum* Sw.) terhadap penurunan kerusakan histopatologi ginjal tikus putih jantan (*Rattus norvegicus*) galur *Sprague-Dawley* diabetes melitus yang diinduksi aloksan.

Kata Kunci: *Solanum torvum* Sw., ginjal, aloksan