

ABSTRAK

Latar belakang: Penyakit ginjal masih menjadi masalah kesehatan global, salah satunya disebabkan oleh penggunaan obat nefrotoksik seperti gentamisin. Gentamisin dapat menimbulkan nefrotoksisitas melalui mekanisme stres oksidatif dan aktivasi respon inflamasi berlebihan yang berujung pada kerusakan struktur ginjal. Buah kersen (*Muntingia calabura* L.) mengandung senyawa bioaktif seperti flavonoid dan fenolik yang memiliki aktivitas antioksidan dan antiinflamasi, sehingga berpotensi sebagai agen nefroprotektif. **Tujuan:** Penelitian ini bertujuan untuk mengevaluasi efektivitas nefroprotektif ekstrak buah kersen terhadap perubahan histopatologi ginjal dan penanda inflamasi pada tikus putih yang diinduksi gentamisin. **Metode:** Penelitian ini merupakan penelitian eksperimental laboratorium dengan desain post-test only control group. Sebanyak 25 ekor tikus putih jantan dibagi secara acak ke dalam lima kelompok, yaitu kontrol negatif, kontrol positif (gentamisin), serta tiga kelompok perlakuan yang menerima gentamisin dan ekstrak buah kersen dengan dosis 50, 100, dan 200 mg/kgBB. Gentamisin diberikan secara intraperitoneal dengan dosis 80 mg/kgBB. Pemeriksaan histopatologi ginjal dilakukan menggunakan pewarnaan hematoksilin–eosin, sedangkan kadar interleukin-6 (IL-6) serum diukur menggunakan metode ELISA. **Hasil:** Induksi gentamisin menyebabkan peningkatan kadar IL-6 serum dan kerusakan histopatologi ginjal secara signifikan dibandingkan kelompok kontrol negatif ($p < 0,05$). Pemberian ekstrak buah kersen secara signifikan menurunkan kadar penanda inflamasi dan memperbaiki gambaran histopatologi ginjal secara bertahap seiring peningkatan dosis. Dosis tertinggi menunjukkan kondisi ginjal yang paling mendekati normal. **Kesimpulan:** Ekstrak buah kersen (*Muntingia calabura* L.) memiliki efek nefroprotektif yang signifikan terhadap nefrotoksisitas akibat gentamisin melalui mekanisme antiinflamasi dan perbaikan struktur histopatologi ginjal, sehingga berpotensi dikembangkan sebagai agen nefroprotektif alami.

Kata kunci: nefroprotektif, Muntingia calabura, gentamisin, inflamasi ginjal, histopatologi

ABSTRACT

Background: Kidney disease remains a significant global health problem, one of which is caused by the use of nephrotoxic drugs such as gentamicin. Gentamicin-induced nephrotoxicity is mediated by oxidative stress and excessive inflammatory responses, leading to structural and functional renal damage. *Muntingia calabura* L. fruit contains bioactive compounds, including flavonoids and phenolic compounds, which possess antioxidant and anti-inflammatory properties and are considered potential nephroprotective agents. **Objective:** This study aimed to evaluate the nephroprotective effect of *Muntingia calabura* L. fruit extract on renal histopathological alterations and inflammatory markers in gentamicin-induced rats. **Methods:** This experimental laboratory study employed a post-test only control group design. Twenty-five male Wistar rats were randomly divided into five groups: negative control, positive control (gentamicin-induced), and three treatment groups receiving gentamicin combined with graded doses of *Muntingia calabura* fruit extract (50, 100, and 200 mg/kg body weight). Gentamicin was administered intraperitoneally at a dose of 80 mg/kg body weight. Renal histopathological changes were evaluated using hematoxylin–eosin staining, while serum interleukin-6 (IL-6) levels were measured using the ELISA method. **Results:** Gentamicin induction significantly increased serum IL-6 levels and caused marked renal histopathological damage compared to the negative control group ($p < 0.05$). Administration of *Muntingia calabura* fruit extract significantly reduced inflammatory marker levels and improved renal histopathological features in a dose-dependent manner. The highest extract dose demonstrated renal structures closest to normal conditions. **Conclusion:** *Muntingia calabura* L. fruit extract exhibits significant nephroprotective effects against gentamicin-induced nephrotoxicity through anti-inflammatory mechanisms and improvement of renal histopathological damage, suggesting its potential as a natural nephroprotective agent.

Keywords: nephroprotective, *Muntingia calabura*, gentamicin, renal inflammation, histopathology