

INTISARI

Latar Belakang: Nefropati diabetik adalah penyebab utama gagal ginjal kronik pada penderita diabetes melitus. Kerusakan ginjal berupa glomerulosklerosis berkaitan dengan disregulasi imunitas yaitu polarisasi makrofag menjadi M1 dan mengakibatkan inflamasi kronis. *Centella asiatica* (L.) Urban (*C. asiatica*) mengandung senyawa aktif triterpenoid saponin yang memiliki aktivitas antioksidan, anti-inflamasi, dan memiliki daya inhibisi terhadap *angiotensin converting enzym*.

Tujuan: Mengetahui efek ekstrak *C. asiatica* terhadap kadar ureum serum, rasio makrofag M1:M2, dan skor glomerulosklerosis ginjal tikus model diabetes melitus yang diinduksi streptozotosin dan nikotinamida.

Metode: Tikus *Wistar* jantan terdiri atas kelompok normal dan kelompok diabetes melitus yang dibagi menjadi kelompok kontrol negatif, kontrol positif (kaptopril 50 mg/kg BB) dan kelompok ekstrak *C. asiatica* dibagi dalam 3 dosis (dosis 250, 500, dan 1000 mg/kg BB/hari). Setiap kelompok diberikan perlakuan selama 8 minggu. Selanjutnya sampel darah tikus diambil untuk mengukur kadar ureum serum. Organ ginjal diambil, dibuat sediaan histopatologi mengukur skor glomerulosklerosis. Sebagian ginjal diisolasi RNA untuk penentuan rasio makrofag M1:M2.

Hasil: Tikus yang diberikan ekstrak *C. asiatica* dosis 250 mg/kg BB/hari memiliki kadar ureum serum, skor glomerulosklerosis, dan rasio makrofag M1:M2 lebih rendah dibandingkan kelompok kontrol negatif ($p < 0,05$) dan tidak berbeda dengan kontrol positif ($p > 0,05$).

Kesimpulan : Ekstrak *C. asiatica* memiliki efek menghambat peningkatan kadar ureum, polarisasi makrofag ke arah M1, dan glomerulosklerosis ginjal tikus model diabetes melitus

Kata Kunci : Nefropati diabetik, *Centella asiatica*, glomerulosklerosis, rasio makrofag M1:M2.

ABSTRACT

Background: Diabetic nephropathy is a major cause of chronic renal failure in people with diabetes mellitus. Kidney damage with glomerulosclerosis associated with immune dysregulation is macrophage polarization to M1 and chronic inflammatory symptoms. *Centella asiatica* (L.) Urban (*C. asiatica*) contains triterpenoid saponin active compounds that have antioxidant, antiinflammatory, and angiotensin converting enzyme inhibitory activity.

Objective: The effect of *C. asiatica* extract on serum urea levels, macrophage M1: M2 ratio, and renal glomerulosclerosis score of diabetes mellitus model induced streptozotocin and nicotinamide.

Method: The male Wistar rats consisted of the normal group and the diabetes mellitus group divided into the negative control group, the positive control (captopril 50 mg / kg BW) and the *C. asiatica* extract group were divided into 3 doses (250, 500, and 1000 mg / kg BW / day). Each group was treated for 8 weeks. Furthermore, rat blood samples were taken to measure serum urea level. Kidney organs taken, histopathologic preparations measure glomerulosclerosis score. Some kidneys are isolated RNA for the determination of macrophage M1: M2 ratio.

Results: rats administered *C. asiatica* dose 250 mg / kg BW / day had ureum serum levels, glomerulosclerosis score, and M1: M2 macrophage ratio was lower than The mice given the extract of *C. asiatica* dose 250 mg / kg BW / day had serum urea level, glomerulosclerosis score, and M1: M2 macrophage ratio was lower than the negative control group ($p < 0.05$) and no different from the positive control ($p > 0.05$).

Conclusions: *C. asiatica* extract has the effect of inhibiting elevated urea content, macrophage polarization towards M1, and renal glomerulosclerosis of rat model diabetes mellitus.

Keywords: Diabetic nephropathy, *Centella asiatica*, glomerulosclerosis, macrophage M1: M2 ratio.