

ABSTRAK

Latar belakang Kurkumin merupakan hepatoprotektor yang dapat berfungsi sebagai antioksidan, namun solubilitas dan bioavailabilitas kurkumin merupakan kekurangan utama yang menghambat efek terapeutiknya. Penelitian ini bertujuan membuktikan pemberian nanopartikel kurkumin dapat mencegah cedera hati yang diukur menggunakan parameter kadar enzim transaminase, SOD, MDA, TNF- α , dan parameter histopatologi hati pada tikus Wistar yang diinduksi parasetamol.

Metode Penelitian eksperimental laboratorik pada 36 tikus Wistar usia 6-8 minggu dengan bobot minimal 120 gram. Selama 7 hari sebelum diinduksi, tikus diberikan kurkumin 100 mg/kgBB, nanopartikel kurkumin 100 mg/kgBB, dan nanopartikel 50 mg/kgBB. Cedera hati dibuat dengan menyuntikkan parasetamol 300 mg/kgBB secara intraperitoneal pada hari ke 8. Antidotum NAC diberikan pada salah satu kelompok 10 jam setelah induksi parasetamol. Deteksi SGOT dan SGPT dengan *Chemistry Analyzer*. Deteksi SOD, MDA dan TNF- α dengan teknik ELISA, dan pengukuran skor Roenigk pada histopatologi hati. Analisis data menggunakan uji *One Way Anova* dan Kruskal Wallis dilanjutkan uji *post hoc*

Hasil Nanopartikel kurkumin (10,2 nm) dibuat dari campuran formula 4 dan kurkumin. Bila dibandingkan dengan kontrol negatif (tikus yang hanya diinduksi parasetamol) maka pada kelompok kurkumin 100 mg/kgBB (P1) terdapat penurunan yang signifikan pada kadar MDA dan TNF- α ($p < 0,05$), serta skor Roenigk histopatologi hati ($p < 0,05$). Hasil pada kelompok nanopartikel kurkumin 100 mg/kgBB (P2) dan kelompok nanopartikel 50 mg/kgBB (P3) terdapat penurunan signifikan pada kadar SGOT, SGPT, MDA, TNF- α , dan skor Roenigk histopatologi hati ($p < 0,05$). Bila dibandingkan dengan kelompok yang diberikan kurkumin 100 mg/kgBB maka pada kelompok P2 terdapat penurunan signifikan kadar SGOT, SGPT, MDA, TNF- α dan skor Roenigk histopatologi hati ($p < 0,05$), sedangkan pada kelompok P3 terdapat penurunan signifikan kadar SGOT, MDA, TNF- α , dan skor Roenigk histopatologi hati ($p < 0,05$).

Simpulan Nanopartikel kurkumin melindungi hati dari cedera hati akibat induksi parasetamol lebih baik dari kurkumin secara signifikan.

Kata Kunci Kurkumin, nanopartikel kurkumin, cedera hati, induksi parasetamol

ABSTRACT

Introduction. Curcumin, as a hepatoprotector, has antioxidant properties. However, curcumin's solubility and bioavailability are its primary drawbacks. This study aimed to prove that administration of curcumin nanoparticles might prevent liver damage in paracetamol-induced Wistar rats as measured by enzyme parameters such as transaminase, SOD, MDA, TNF-, and liver histopathology parameters.

Purpose. This study aimed to determine the hepatoprotector effect of curcumin nanoparticles in paracetamol-induced rats as a model for liver damage

Methods. 36 Wistar rats were used in laboratory experiments. Rats in each group received 100 mg/kg BB curcumin, 100 mg/kgBW curcumin nanoparticles, and 50 mg/kg BW nanoparticles for 7 days prior to induction. On day 8, 300 mg/kgBW of paracetamol was intraperitoneally injected to cause liver damage. One of the groups received NAC antidote 10 hours after paracetamol induction. Detection of ALT and AST using a Chemistry analyzer ELISA approach for the detection of SOD, MDA, and TNF. The Roenigk score of liver histopathology was calculated by two examiners. Following the One Way Anova and Kruskal Wallis tests, post hoc tests were used to analyze the data.

Results. The curcumin nanoparticles (10.2 nm) were made by curcumin and formula 4. MDA and TNF- α levels, the liver's histological Roenigk score, were significantly lower in the 100 mg/kgBB (P1) curcumin group when compared to the negative control (rats just given paracetamol to induce them). The levels of SGOT, SGPT, MDA, TNF- α , and the liver histopathology score were significantly lower in the 100 mg/kgBB (P2) and 50 mg/kgBB (P3) curcumin nanoparticle groups than the negative control group, respectively ($p < 0.05$). The levels of SGOT, SGPT, MDA, TNF- α , and the liver histological Roenigk score were significantly lower in group P2 compared to the P1 group ($p < 0.05$).

Conclusion. Curcumin nanoparticles significantly protect the liver from paracetamol-induced liver injury better than curcumin

Keywords. Curcumin, curcumin nanoparticles, liver injury, paracetamol induction