

INTISARI

PENGARUH PEMBERIAN ASAM KLOOROGENAT (CGA) TERHADAP FIBROSIS HEPAR MENCIT JANTAN YANG DIINDUKSI DENGAN KARBON TETRAKLORIDA (CCL₄) (Kajian Terhadap Ekspresi NF- κ B, TLR4, TGF- β 1, dan Kadar Bilirubin Total)

Latar belakang: Fibrosis hepar terjadi karena paparan racun, bakteri, virus, stres oksidatif, atau peningkatan ROS sehingga menyebabkan terjadinya peningkatan ekspresi gen NF- κ B, TLR4, TGF- β 1 dan kadar bilirubin total. CCL₄ dikenal memiliki sifat hepatotoksik dapat merusak jaringan dan menyebabkan fibrosis hepar. CGA merupakan senyawa fenolik yang mampu memberikan efek pencegahan terhadap perkembangan fibrosis hepar.

Tujuan Penelitian: Untuk mengungkap pengaruh CGA sebagai antifibrogenesis pada fibrosis hepar mencit melalui jalur fibrogenesis yang diinduksi CCL₄.

Metode Penelitian: Studi eksperimental murni dengan rancangan eksperimental sederhana atau *post-test only control group design*. Mencit jantan galur Swiss, umur 2,5 bulan, berat badan \pm 20 gram sebanyak 29 ekor. Setiap mencit dibagi dalam 6 kelompok yang setiap kelompok terdiri dari 5 ekor mencit. 3 kelompok kontrol (NaCl, CGA, dan CCL₄) dan 3 kelompok perlakuan (dosis 42 mg/kg, 63 mg/kg dan 84 mg/kg). Pada akhir perlakuan, mencit diterminasi menggunakan ketamin 75 mg/kgBB i.m dan dislokasi servikal. Selanjutnya diambil darah melalui pleksus retroorbitalis mata dan dibedah pada bagian linea mediana serta pengambilan organ hepar. Serum darah digunakan untuk mengkaji kadar bilirubin total dan organ hepar digunakan untuk pemeriksaan ekspresi NF- κ B, TLR4 dan TGF- β 1 (rt-PCR). Data dianalisis menggunakan test *one-way* ANOVA ($p < 0,05$).

Hasil Penelitian: Hasil penelitian ini menunjukkan bahwa peran CGA mampu menghambat kondisi fibrosis. Berdasarkan analisis statistik untuk ekspresi gen NF- κ B, TLR4, TGF- β 1, dan bilirubin total lebih rendah dibanding kelompok yang diberi CCL₄. Berdasarkan uji *One-way* ANOVA Nilai signifikansi masing-masing variabel $p < 0,05$. ($p = 0.042$; $p = 0.005$; $p = 0.006$; and $p = 0.001$). Semakin tinggi dosis CGA berkemampuan sebagai antifibrosis dalam menghambat ekspresi NF- κ B, TLR4, TGF- β 1, dan kadar bilirubin total.

Kesimpulan: Ekspresi NF- κ B, TLR4, TGF- β 1 dan kadar bilirubin total pada fibrosis hepar yang diinduksi CGA + CCL₄ (42,63,84 mg/kgBB + 0,5 mL/kgBB) lebih rendah dibanding dengan kelompok kontrol CCL₄.

Kata Kunci : CCL₄, Fibrosis, Hepar, CGA, NF- κ B, TLR4, TGF- β 1, Bilirubin Total

ABSTRACT

CHLOROGENIC ACID AS A CANDIDATE OF ANTI-FIBROTIC ON MALE MICES LIVER FIBROSIS THAT INDUCED BY CARBON TETRACHLORIDE

[Study of NF-κB, TLR4, TGF-β1 Expression, and Bilirubin Total Levels]

Background: Liver is the biggest organ and important for maintain the life quality of human. However, excessive activities of toxin, oxidative stress, ROS, virus or bacteria cause tissue damage and induced liver fibrosis. Chlorogenic acid (CGA) as phenolic compound has ability to removed residual substance in liver.

Aim: This study elucidate the effect of CGA on expression of NFκB, TLR4, TGF-β1 and level of total bilirubin as anti-fibrogenesis for liver fibrosis.

Method: The total 29 mices of 2.5-month-old male Swiss mice with weigh 35-40 gram divided into 6 group: 3 groups of controls (injected by natrium chloride, CGA, or Carbon tetrachloride (CCL₄)) and 3 groups of treated (injected by CGA doses 42 mg/kg, 63 mg/kg or 84 mg/kg). In the end of treatment, mice were terminated by cervical dislocation. Total bilirubin levels were measured from blood which taken from plexus retro-orbital of eyes. The expression of NF-κB, TLR4 and TGF-β1 of liver was measured by rt-PCR.

Results: This study showed that CCL₄ with 0,5 mL/kg can induce liver fibrosis. Expression of NF-κB, TLR4, TGF-β1 and bilirubin total among treated group was statistically significant lower than liver fibrosis group (respectively, p=0.042; p=0.005; p=0.006; and p=0.001). Higher dose of CGA showed greater ability in suppressing the expression of NF-κB, TLR4, TGF-β1 and bilirubin total.

Conclusion: To sum up, CGA with doses variation able to prevent the development of liver fibrosis which induced by CCL₄.

Keywords: CCL₄, CGA, NF-κB, TLR4, TGF-β1, Bilirubin Total.