INTISARI

Latar belakang : Hepar terpapar banyak zat yang masuk ke tubuh sehingga rentan mengalami cidera. CCl_4 dapat menyebabkan fibrosis hepar akibat kenaikan aktifasi dari *Hepatic Stellate Cells* (HSC) dan akumulasi matriks ekstraseluler. Salah satu zat yang berpotensi sebagai antiinflamasi dan antioksidan adalah Asam klorogenat (CGA).

Tujuan: Mengetahui pengaruh CGA terhadap skor fibrosis, kadar SGPT dan SGOT, fraksi area miofibroblas dan ekspresi *Hepatocyte Growth Factor* (HGF).

Metode: Subjek penelitian berupa Mencit galur *Swiss* sebanyak 30 ekor dibagi kedalam 6 kelompok yaitu (K1 kontrol NaCl 0.9%), (K2 CGA 63 mg/kg/BB), (K3 CCl_4 0.5 mg/kg/BB), (P1 CCl_4 0.5 mg/kg/BB+ CGA 42 mg/kg/BB), (P2 CCl_4 0.5 mg/kg/BB+ CGA 63 mg/kg/BB), P3 (CCl_4 0.5 mg/kg/BB+ 84 mg/kg/BB). Perlakuan diberikan selama 28 hari. CCl_4 diberikan melalui suntikan intraperitoneal 2 kali dalam 7 hari selama 28 hari. CGA diberikan secara intragastric (oral) setiap hari selama 28 hari. Pada hari ke-29 diukur kadar serum SGPT SGOT. Mencit diterminasi, diambil organ hepar, dibuat preparat dengan pewarnaan *Sirius red* dan Imunohistokimia αSMA serta dilakukan pemeriksaan ekspresi HGF menggunakan RT-PCR. Data yang didapatkan diuji normalitas dengan uji Shapiro-Wilk, jika terdistribusi normal dilanjutkan dengan *One-Way* ANOVA, jika tidak terdistribusi nomal diuji dengan Kruskal-Wallis.

Hasil : Penurunan skor fibrosis pada kelompok perlakuan CGA (P1, P2 dan P3) dibandingkan dengan kelompok CCl_4 (K3),p= 0.000 (Kruskal-Wallis). CGA menyebabkan penurunan kadar SGOT dan SGPT dibandingkan kelompok CCl_4 (K3), SGOT p=0.013 (Kruskal-Wallis), SGPT p=0.05(Kruskal-Wallis). CGA juga menyebabkan penurunan fraksi area miofibroblas dibandingkan dengan kelompok CCl_4 (K3), p= 0.001(Kruskal-Wallis) dan peningkatan ekspresi HGF dibandingkan dengan kelompok CCl_4(K3) dengan p=0.513 (*One-Way* ANOVA), nilai p signifikan pada $p<0.05$.

Kesimpulan : CGA menyebabkan penurunan skor fibrosis, penurunan kadar SGPT dan SGOT, penurunan fraksi area miofibroblas dan tidak terjadi kenaikan ekspresi HGF.

Kata kunci : CCl_4, CGA, fibrosis, miofibroblas, *Hepatocyte Growth Factor* (HGF).

ABSTRACT

Background: Hepar exposed many substances that enter the body and so easy to injury. CCl_4 may cause hepatic fibrosis due to increased activation of Hepatic Stellate Cells (HSC) and extracellular matrix accumulation. One of the substances that potentially as anti-inflammatory and antioxidants is chlorogenic acid (CGA).
Objective: To determine the effect of CGA on fibrosis score, SGPT and SGOT levels, Area fraction of miofibroblasts and expression of Hepatocyte Growth Factor (HGF).
Methods: The research subject were 30 of Swiss mice, divided into 6 groups (G1 control NaCl 0.9%), (G2 CGA 63 mg/kg/BW), (G3 CCl_4 0.5 mg/kg/BW), (T1 CCl_4 0.5 mg/kg/BW+CGA 42 mg/kg/BW), (T2 CCl_4 0.5 mg/kg/BW+CGA 63mg/kg/BW), T3 (CCl_4 0.5 mg/kg/BW+84 mg/kg/BW). The treatment were given for 28 days. CCl_4 were administered by intraperitoneal injection 2 times in 7 days for 28 days. CGA were administrated intragastrically (orally) daily for 28 days. On the 29^{th} day, blood of the mice were taken for serum SGPT SGOT measurement. Mice terminated, the liver taken for histologically Sirius red staining and Immunohistochemistry αSMA, also measured HGF expression examination used RT-PCR. The data obtained were tested for normality by Shapiro-Wilk test, normally distributed followed by One-Way ANOVA, not normally distributions were tested with Kruskal-Wallis.
Results: Decreased fibrosis score in the CGA treatment group (T1, T2 and T3) compared with CCl_4 group (G3), p= 0.000 (Kruskal-Wallis). CGA decreased levels of SGOT and SGPT compared to CCl_4 group (G3), SGOT p= 0.013 (Kruskal-Wallis), SGPT p= 0.05 (Kruskal-Wallis). CGA also decreased area fraction of miofibroblasts compared to the CCl_4 group (G3), p = 0.001 (Kruskal-Wallis) and increased HGF expression compared to the CCl_4 (G3) group with p = 0.513 (One-Way ANOVA), significant p value at $p < 0.05$.
Conclusion: CGA leads to decreased fibrosis scores, decreased levels of SGPT and SGOT, decreased miofibroblasts and not increased HGF expression.

Keyword : CCl_4, CGA, fibrosis, miofibroblast, Hepatocyte Growth Factor (HGF).