

ABSTRAK

Judul : Pengaruh Ekstrak Ikan Gabus (*Channa Striata*) Terhadap Kadar Malondialdehida (MDA) dan Gambaran Histopatologi Hati Tikus yang Diinduksi Karbon Tetraklorida (CCl₄)
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Penginduksian karbon tetraklorida (CCl₄) pada tikus Wistar menimbulkan stres oksidatif yang menyebabkan kerusakan progresif hati hingga sirosis. Ekstrak ikan gabus (*Channa striata*), yang kaya albumin, asam amino esensial, dan asam lemak tak jenuh, berpotensi sebagai hepatoprotektif. Penelitian ini bertujuan mengevaluasi pengaruh ekstrak ikan gabus terhadap kadar malondialdehida (MDA) dan gambaran histopatologi hati pada model sirosis.

Penelitian eksperimental dengan *randomized post-test only control group design* menggunakan 30 tikus Wistar jantan (150–250 g) yang dibagi menjadi lima kelompok (n=6): kontrol normal (K1), kontrol sirosis CCl₄ (K2), serta perlakuan ekstrak dosis 100 mg/kgBB (K3), 150 mg/kgBB (K4), dan 200 mg/kgBB (K5). Kadar MDA diukur dengan metode TBARS, sedangkan histopatologi dengan pewarnaan HE. Analisis statistik menggunakan One-Way ANOVA dilanjutkan Tukey untuk MDA, serta Kruskal-Wallis dan Mann-Whitney U dengan koreksi Bonferroni untuk histopatologi ($p < 0,05$).

Hasil menunjukkan penurunan kadar MDA secara *dose-dependent*: K2 ($6,65 \pm 0,13$), K3 ($5,30 \pm 0,15$), K4 ($4,05 \pm 0,13$), K5 ($2,80 \pm 0,15$) nmol/g, dengan perbedaan signifikan dibanding K2 ($p < 0,001$). Perbaikan histopatologi berupa penurunan nekrosis, kongesti, dan infiltrasi sel radang juga meningkat bertahap, dengan skor terbaik pada K5 ($p < 0,001$). Sementara itu, berat hepar menunjukkan perbedaan yang signifikan antar kelompok (Nilai $P=0.025$) dengan nilai tertinggi pada dosis 150 mg/kgBB (6.43 g).

Ekstrak ikan gabus (*Channa striata*) menunjukkan efek hepatoprotektif melalui penurunan stres oksidatif dan perbaikan histopatologi hati, terutama pada dosis 200 mg/kgBB. Temuan ini mendukung potensinya sebagai terapi alami, namun perlu konfirmasi lebih lanjut melalui parameter fungsi hati serum.

Kata kunci: *Channa striata*, karbon tetraklorida, stress oksidatif hati, malondialdehida (MDA), histopatologi hati, respons-dosis

ABSTRACT

Title : Dose-Responsive Mitigation of Hepatic Oxidative Stress and Histopathological Damage by *Channa striata* Extract in Post-Carbon Tetrachloride-Exposed Rats

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Carbon tetrachloride (CCl₄) is widely used to induce experimental oxidative liver injury through the generation of free radicals that promote lipid peroxidation and hepatocellular damage. Natural products with antioxidant properties are being explored for their potential to mitigate such injury.

*This study aimed to evaluate the dose-responsive ameliorative effects of *Channa striata* extract on hepatic oxidative stress and histopathological alterations in rats following subacute CCl₄ exposure.*

*Thirty male Wistar rats were divided into five groups: normal control (K1), CCl₄ control (K2), and three treatment groups receiving *C. striata* extract at 100, 150, and 200 mg/kg body weight/day for two weeks after six weeks of CCl₄ induction (K3–K5). Hepatic malondialdehyde (MDA) levels were measured as an indicator of lipid peroxidation. Liver histopathology was assessed for hepatocellular necrosis, congestion, and inflammatory cell infiltration using a semi-quantitative scoring system.*

*CCl₄ exposure significantly increased hepatic MDA levels and caused severe histopathological damage in the control group. Treatment with *C. striata* extract significantly attenuated MDA levels in a dose-dependent manner ($p < 0.001$). The 200 mg/kg/day group showed the lowest MDA levels (2.80 ± 0.15 nmol/g) compared to the CCl₄ control (6.65 ± 0.13 nmol/g). Histopathological scores for necrosis, congestion, and inflammatory infiltration were also ameliorated progressively with increasing extract doses. The 200 mg/kg/day group*

exhibited the most pronounced mitigation of histological injury, with median total scores improving from 8.5 (CCl₄ control) to 2.0.

Channa striata extract demonstrates dose-dependent ameliorative activity against established CCl₄-induced oxidative liver injury, as evidenced by attenuation of lipid peroxidation and mitigation of histopathological damage. Further studies incorporating serum liver enzymes and molecular mechanisms are warranted.

Keywords: Channa striata; carbon tetrachloride; hepatic oxidative stress; malondialdehyde (MDA); histopathology; dose-response; ameliorative effect