

**PENGARUH DOSIS DAN DURASI PAPARAN TIMBAL (Pb) TERHADAP
KADAR GLUTATION TEREDUKSI (GSH) PADA TIKUS WISTAR JANTAN
(*Rattus norvegicus*)**

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ABSTRAK

Latar belakang: Keracunan timbal terjadi melalui mekanisme stres oksidatif yang melibatkan ketidakseimbangan *reactive oxygen species* (ROS) dan antioksidan seperti glutathion tereduksi (GSH). Timbal sangat berbahaya apabila terbioakumulasi yang ditandai dengan perubahan kadar GSH. Dosis dan durasi paparan timbal mempengaruhi efek akumulasinya pada tikus wistar jantan yang cenderung muncul setelah paparan kronis. Paparan akut menjadi parameter penelitian ini.

Tujuan: Untuk mengetahui pengaruh dosis dan durasi paparan timbal terhadap kadar GSH pada tikus Wistar jantan (*Rattus norvegicus*).

Metode: Penelitian ini menggunakan *true experimental* dengan *completely randomized post-test only control group design*. Desain melibatkan 45 ekor tikus Wistar jantan (*Rattus norvegicus*) yang terbagi dalam 5 kelompok (K(-), P1, P2, P3, dan P4) yang secara berurutan diberikan aquades, timbal asetat dosis 50, 100, 150, dan 200 mg/KgBB/hari. Setiap kelompok terbagi dalam 3 sub kelompok berdasarkan durasi perlakuannya, yakni 3, 7, dan 14 hari. Pengukuran kadar GSH menggunakan sampel darah yang diambil setelah hari terakhir perlakuan dengan metode Ellman. Analisis data menggunakan uji *Oneway ANOVA*.

Hasil: Hasil *oneway ANOVA* pengaruh dosis paparan timbal didapatkan $p < 0,001$ ($p < 0,05$) untuk perlakuan 3, 7, dan 14 hari sedangkan pengaruh durasi paparan timbal didapatkan $p = 0,253$ ($p > 0,05$) untuk kelompok kontrol serta $p < 0,001$ ($p < 0,05$) untuk kelompok perlakuan terhadap kadar GSH.

Kesimpulan: Pemberian timbal berbagai dosis dan durasi berpengaruh terhadap kadar GSH pada tikus Wistar jantan (*Rattus norvegicus*). Dosis dan durasi timbal asetat peroral 50 mg/kgBB/hari selama 3 hari sudah dapat menurunkan kadar GSH secara signifikan.

Kata kunci: dosis, durasi, glutathion tereduksi (GSH), tikus wistar, timbal

THE EFFECT OF DOSE AND DURATION OF LEAD (Pb) EXPOSURE ON REDUCED GLUTATHIONE (GSH) LEVELS IN MALE WISTAR RATS (*Rattus norvegicus*)

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ABSTRACT

Background: Lead poisoning is caused by oxidative stress due to an imbalance between reactive oxygen species (ROS) and antioxidants like reduced glutathione (GSH). Lead toxicity becomes critical when bioaccumulated, as reflected by changes in GSH levels. While low-dose effects usually appear after chronic exposure in wistar rats. This study focuses on acute exposure.

Objective: To assess the effects of dose and duration of lead exposure on GSH levels in male Wistar rats (*Rattus norvegicus*).

Methods: A true experimental study with a completely randomized post-test-only control group design was conducted. A total of 45 male Wistar rats were divided into five groups: K(-) (control) received distilled water, while P1, P2, P3, and P4 received lead acetate at doses of 50, 100, 150, and 200 mg/KgBW/day, respectively. Each group was further divided into subgroups treated for 3, 7, and 14 days. GSH levels were measured using blood samples collected on the final day of treatment with the Ellman method. Data were analyzed using one-way ANOVA.

Results: One-way ANOVA showed a significant effect of lead exposure dose on GSH levels ($p < 0.001$) across all durations. Duration of exposure did not significantly affect GSH levels in the control group ($p = 0.253$) but showed significant effects in the treatment groups ($p < 0.001$).

Conclusion: Lead exposure at varying doses and durations impacts GSH levels in male Wistar rats. Even low-dose lead acetate (50 mg/KgBW/day) for 3 days significantly reduces GSH levels.

Keywords: dose, duration, lead, reduced glutathione (GSH), wistar rat