

ABSTRAK

PENGARUH PAPARAN SUB KRONIK PB ASETAT TERHADAP KADAR SUPEROKSIDA DISMUTASE (SOD) PADA HEPAR TIKUS WISTAR JANTAN (*Rattus norvegicus*)

Latar Belakang: Timbal (Pb) merupakan logam berat yang memiliki sifat toksisitas tinggi yang mampu meningkatkan ROS sehingga menurunkan aktivitas antioksidan enzimatis seperti *superoksida dismutase* (SOD). SOD akan mengkatalisis anion superoksida (O_2^-) dan hidrogen (H) menjadi hidrogen peroksida (H_2O_2). **Tujuan:** Mengetahui pengaruh dosis dan durasi paparan sub-kronik Pb (timbal) terhadap kadar antioksidan *superoxide dismutase* (SOD) pada tikus Wistar jantan (*Rattus norvegicus*). **Metode:** Penelitian ini menggunakan desain *posttest only control group design* dengan hewan coba tikus putih galur Wistar jantan (*Rattus norvegicus*) sebanyak 45 ekor tikus. Kelompok perlakuan dibagi menjadi 3 durasi yaitu 35, 40, dan 45 hari yang masing masing kelompok terbagi dalam 5 perlakuan yaitu aquadest, 10mg/kgBB, 25mg/kgBB, 50mg/kgBB, dan 75mg/kgBB. Induksi Pb asetat melalui rute peroral. Pemeriksaan kadar SOD menggunakan metode ELISA. **Hasil:** Hasil uji *Oneway ANOVA* menunjukkan bahwa durasi paparan timbal memberikan pengaruh yang signifikan dengan nilai $p < 0,05$ pada perlakuan selama 35, 40 dan 45 hari. Pada dosis paparan timbal tidak menunjukkan pengaruh yang signifikan dengan $p > 0,05$ pada kelompok kontrol dan 10mg/kgBB, dan signifikan $p < 0,05$ pada kelompok 25mg/kgBB, 50mg/kgBB, dan 75mg/kgBB terhadap kadar *superoksida dismutase* (SOD). **Kesimpulan:** Paparan timbal berbagai dosis dan durasi terbukti menurunkan kadar SOD hepar tikus Wistar jantan (*Rattus norvegicus*). Paparan timbal secara signifikan menurunkan kadar SOD mulai dosis 25mg/kgBB selama 35, 40, dan 45 hari.

Kata kunci: *reactive oxygen species* (ROS), stress oksidatif, *superoksida dismutase* (SOD), timbal (Pb)

ABSTRACT

THE EFFECT OF SUB-CHRONIC EXPOSURE TO LEAD ACETATE ON SUPEROXIDE DISMUTASE (SOD) LEVELS IN THE LIVER OF MALE WISTAR RATS (*Rattus Norvegicus*)”

Background: Lead (Pb) is a heavy metal with high toxicity that can elevate ROS, thereby reducing the activity of enzymatic antioxidants such as superoxide dismutase (SOD). SOD catalyzes the conversion of superoxide anions (O_2^-) and hydrogen (H) into hydrogen peroxide (H_2O_2). **Objective:** This study aimed to evaluate the effects of dose and duration of sub-chronic lead (Pb) exposure on hepatic superoxide dismutase (SOD) levels in male Wistar rats (*Rattus norvegicus*). **Method :** A posttest-only control group design was applied using 45 male Wistar rats. Animals were assigned to three exposure durations (35, 40, and 45 days), each consisting of five treatment groups: aquadest (control), 10 mg/kg BW, 25 mg/kg BW, 50 mg/kg BW, and 75 mg/kg BW. Lead acetate was administered orally. SOD levels were measured using the ELISA method. **Results:** The One-Way ANOVA results showed in lead exposure durations had a significant effect on superoxide dismutase (SOD) levels at treatment durations of 35, 40, and 45 days ($p < 0.05$). Based on the dose groups, no significant effect was observed in the control group or in the 10 mg/kgBW dose group ($p > 0.05$). However, significant effects were found in the 25 mg/kgBW, 50 mg/kgBW, and 75 mg/kgBW dose groups ($p < 0.05$), indicating that higher lead exposure doses were associated with significant changes in SOD levels. **Conclusion:** Sub-chronic lead exposure at various doses and durations significantly reduced hepatic SOD levels in male Wistar rats. Significant decreases were observed starting at 25 mg/kg BW across all exposure durations (35, 40, and 45 days).

Keywords: lead (Pb), oxidative stress, reactive oxygen species (ROS), superoksida dismutase (SOD)