

## EFFECT OF SUBACUTE DIBUTYL PHTHALATE TREATMENT ON THE ACTIVITY AND EXPRESSION OF ANTIOXIDANT ENZYMES IN RAT LIVER

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### **Abstract**

Di-n-butyl phthalate (DBP), a common plastic additive, is prone to leaching and evaporating from plastic products due to its weak chemical bonds, resulting in its widespread presence in the environment. The aim of our study was to investigate whether DBP applied orally in various doses disturbs the activity and expression of antioxidant enzymes in rat liver. A total of 30 female *Wistar* rats were divided into 4 groups and exposed to DBP in food in doses of 0, 100, 500, and 5000 mg/kg diet, for 28 days. After the study period, tissue samples were collected for evaluating the antioxidant capacity and for RNA extraction. Total superoxide dismutase (SOD) and catalase (CAT) activities were measured spectrophotometrically by monitoring changes in absorbance over the 3min interval, while the expression of the *Sod1*, *Sod2* and *Cat* were obtained by real-time RT-PCR. Our findings revealed that total SOD activity was notably lower in groups treated with 100 and 500 mg DBP/kg diet. Conversely, CAT activity significantly increased in groups exposed to 500 and 5000 mg DBP/kg compared to the control group. However, our RT-qPCR analysis showed no statistically significant changes in the expression of corresponding genes. Our results indicate that subacute dibutyl phthalate treatment causes adverse effects on the activity of antioxidant enzymes, potentially leading to oxidative damage.

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