

# 4<sup>th</sup> Global Summit on **Toxicology**

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## **Heavy metal-induced up regulation of anti-oxidative enzymes and hemolymph biochemical compositions in *Oxya hyla hyla* (Serville)**

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Present study was conducted to determine toxic effects of heavy metals (Cd, Pb and Hg) on antioxidant enzymes of a grasshopper species i.e., *Oxya hyla hyla* (Serville). Changes in the activities of antioxidant enzymes [superoxide dismutase (SOD), catalase (CAT), peroxidase (POD), lipid peroxidation (LPO)] and biochemical composition of hemolymph were measured by exposing trailed insect to Cd+2, Pb+2 and Hg+2 at different concentrations (0,  $0.50 \times 10^{-4}$ ,  $1.10 \times 10^{-4}$ ,  $1.55 \times 10^{-4}$ gg-1) of CdCl<sub>2</sub>, PbCl<sub>2</sub> and HgCl<sub>2</sub> for variable exposure time (24, 50 and 75 hours). The insect showed significant accumulation of metals with the increase in exposure of dose and time. The SOD activity was lowered at  $1.10 \times 10^{-4}$  to  $1.55 \times 10^{-4}$ gg-1 than at  $0.50 \times 10^{-4}$ gg-1 Cd+2, Pb+2 and Hg+2 levels. Detoxification effect was expressed by SOD at low metal concentrations and this effect disappeared at high concentrations. Assayed activities of CAT, POD and LPO level were significantly accelerated and correlated positively as metal exposure time increased showing species dependency. A significant decrease in total soluble protein, sugar, lipids and glycogen contents was observed due to metal exposure throughout the entire tested period except after the first 24 hours of exposure at the lower concentrations. Thus CAT had a strong detoxification effect as compared to SOD whereas POD had a weak detoxification effect. The study thus concludes that *O. hyla hyla* (Orthoptera: Acrididae) and its antioxidant enzyme level can be used as bioindicator and bio marker of biotic and abiotic stresses.

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## **The safety of green tea extract supplementation in postmenopausal women at risk for breast cancer: Results of the Minnesota green tea trial**

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Green tea is a popular beverage and is thought to provide health benefits, though adverse reactions to green tea extract (GTE) have been reported and are not well understood. We conducted a randomized, double-blind, placebo-controlled study of GTE in which 1075 postmenopausal women with high mammographic density were randomly assigned to consume GTE containing 843 mg (-)-epigallocatechin-3-gallate (EGCG) or placebo daily for one year. There were no significant differences in % of women with AEs (75.6% and 72.8% of GTE and placebo groups respectively) or serious AEs (2.2 % and 1.5% of GTE and placebo group respectively). Women on GTE reported significantly higher incidence of nausea ( $P < 0.001$ ) and dermatologic AEs ( $P = 0.05$ ) and significantly lower diarrhea incidence ( $P = 0.02$ ). More women in the GTE group experienced an alanine aminotransferase (ALT) elevation compared with placebo group ( $n = 36$  (6.7%) vs.  $n = 4$ , (0.7%);  $P < 0.001$ ). There were no statistically significant differences between groups in frequencies of other AEs. Overall, AEs were mainly mild and transient indicating that daily consumption of GTE containing 843 mg EGCG is generally well tolerated by a group of predominantly Caucasian postmenopausal women. However, 6.7% of GTE consumers experienced ALT elevations with 1.3% experiencing ALT-related serious AEs.

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