

Poster 56

## Does paraquat exposure affect peroxisomal enzyme activities in trout?

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### Abstract

**Background:** Environmental pollutants may exert toxicological effects in aquatic organisms, sometimes inducing the intracellular formation of reactive oxygen species with consequent cellular damage [1,2]. Paraquat is a potent herbicide that can be highly toxic for fish, causing morphological and biochemical alterations in several organs [3,4]. **Objective:** Since activity of peroxisomal enzymes is implicated in the reactive oxygen species and xenobiotic metabolisms [5], a subacute exposure of brown trout (*Salmo trutta* f. *fario*) to a waterborne relevant environmental concentration of paraquat was performed to verify if some peroxisomal enzymes, particularly from the liver and kidney, would be significantly altered. **Methods:** Immature (1-year-old) brown trouts were exposed to 0.3 mg/L of paraquat for 7 or 15 days; concentration was renewed every 2-3 days. Ten fish were collected on day 0 of the experience as control. At the end of the exposure period, ten animals from each group, paraquat and control, were collected. The catalase, D-amino acid oxidase, and urate oxidase enzyme activities were measured spectrophotometrically in liver and renal homogenates. Statistical analysis recurred to one-way ANOVA. **Results:** The liver's enzyme activities did not differ significantly between the control and paraquat groups after 7 and 15 days of exposure. In the kidney, urate oxidase was not detectable, and no statistical differences were found between the control and paraquat groups. During the experiment, however, both control and exposed groups showed increased catalase activity while decreasing D-amino acid oxidase activity. **Conclusions:** At the tested concentration, paraquat did not affect the studied peroxisomal enzymes in the liver and kidney. Notably, there were changes over time, warning that captivity or experimental stress influenced the enzyme activities. This aspect deserves further study. Moreover, research with other concentrations and targets should be done to refine the assessment of paraquat's toxicological potential for peroxisomes.

**Keywords:** herbicide; brown trout; enzyme activities; kidney peroxisomes; liver peroxisomes

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