

## Iodoacetic Acid Alters the Expression of Oxidative Stress Genes in the Mouse Ovary

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The incorporation of water disinfectants into the main water supply has significantly decreased the presence of waterborne diseases such as cholera. However, the interaction between disinfectants and organic material generates water disinfection byproducts (DBPs). Iodoacetic Acid (IAA) is one unregulated DBP and has been reported as a reproductive toxicant. Our previous studies show that IAA inhibits follicle growth and alters the expression of steroidogenic factors *in vitro*, but its effects on the expression of oxidative stress markers are unknown. Thus, this study tested the hypothesis that IAA exposure alters gene expression of oxidative stress markers in the mouse ovary. To test this hypothesis, adult CD-1 mice were dosed with either water (control) or IAA (0.5 mg/L; 10 mg/L; 100 mg/L; 500 mg/L) in their drinking water for 35 days. Following this, ovaries were collected when the mice were in diestrus, RNA was extracted, reverse transcribed, and subjected to quantitative polymerase chain reaction (qPCR) to analyze the expression of oxidative stress markers with glutathione properties (*Gstt1*, *Gstp1*, *Gsta1*, *Gsto1*), antioxidant properties (*Gpx1*, *Gsr*, *Cat*), and superoxide properties (*Sod1*, *Sod2*). IAA exposure decreased expression of glutathione oxidative stress markers *Gstt1* for the 0.5 mg/L, 10 mg/L and 500 mg/L treatment groups compared to the control and *Gstp1* for the 10 mg/L treatment group compared to the control, but did not affect the expression of *Gsto1* or *Gsta1* compared to control. Further, IAA exposure decreased the expression of the antioxidant oxidative stress marker *Cat* for the 0.5 mg/L, 10 mg/L, 100 mg/L and 500 mg/L IAA treatment groups compared to the control, but did not affect the expression of *Gpx1* or *Gsr* compared to control. In addition, IAA significantly decreased the expression of the superoxide oxidative stress marker *Sod1* for the 0.5 mg/L, 10 mg/L and 100 mg/L IAA treatment groups compared to the control, but did not affect the expression of *Sod2* compared to control. These data indicate that IAA exposure alters oxidative stress gene expression in the mouse ovary. This project is supported by NIH R21ES028963.