

# Strengthening *Daphnia magna*'s Resistance to Poisoning Caused by Copper (II) Sulfate Pentahydrate using Non-Invasive Methodology

Wilson, Elise

*Daphnia Magna* are invertebrate organisms that live in streams and rivers, and are used for medical research, environmental, pharmaceutical, and other types of studies. Many vertebrate animals, such as fish, feed off *Daphnia Magna*, so without them, a large part of the food supply would be missing. This project examines if non-invasive methodology can strengthen *Daphnia Magna*'s resistance to poisoning caused by Copper (II) Sulfate Pentahydrate. This project was chosen because while conducting research, no information was found on how to prevent the poisoning, and death, of *Daphnia Magna*. This experiment was conducted by exposing *Daphnia Magna* to high doses of vitamins A and D, then exposing them to Copper (II) Sulfate Pentahydrate. These vitamins were chosen because *Daphnia Magna* are hosts of vitamins A and D, so these substances are non-invasive. Copper (II) Sulfate Pentahydrate was chosen as it is highly toxic to *Daphnia Magna* and other marine life, and is used in the cleaning of ponds and rivers. The hypothesis was that vitamin A would provide the greatest resistance to poisoning caused by Copper (II) Sulfate Pentahydrate, because it is essential for growth and development, and serves as an anti-infective agent. The hypothesis was accepted. The average time for the primary percentage of the *Daphnia Magna* to die was 70-80 minutes for vitamin A, 0-10 minutes for the Controlled group, and 20-30 minutes for vitamin D.