# The Green Algae, Chlorella vulgaris, Mitigates Detrimental Effects of Methylmercury in Zebrafish

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Modern society has become dependent on electronics. With rapidly advancing technology, devices quickly become obsolete and are often improperly disposed in landfills. These electronics contain heavy metals such as mercury and lead, and can cause serious detrimental effects to plant and animal species. Recent studies have shown the ability of the green algae to remove heavy metals from aquatic systems. This experiment tested the protective effects of the green algae, chlorella vulgaris, on zebrafish exposed to multiple concentrations of methylmercury (MeHg) through monitoring mortality rates, hatching success, and body length. Compared to control samples, Chlorella vulgaris was able to have a protective effect on the zebrafish at higher concentrations of MeHg, by significantly decreasing their mortality rates and increasing mean body length and hatching success. However, chlorella had a detrimental effect on the zebrafish, as evidenced by a higher mortality rate at lower concentrations of MeHg. Potentially, the algae suppressed the VEGF signal protein within the zebrafish, decreasing blood vessel formation and proper embryonic development. This mechanism likely incited premature hatching in the zebrafish exposed to chlorella. In conclusion, the chlorella algae have a beneficial effect on zebrafish at higher concentrations of MeHg through stabilizing body lengths and decreasing mortality. Because the chlorella may also have a detrimental effect on the zebrafish, future experimental would involve decreasing the concentration of chlorella algae used (1mg/mL was used in experimentation). By lowering this concentration, optimization of chlorella's ability to accumulate MeHg while still having a beneficial effect on the zebrafish could be discovered.

**Awards Won:**
Third Award of $1,000