CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

35712

Project Title

The Effects of the Heavy Metal CdCl(2) on the Embryonic and Vascular Development of Danio rerio

Abstract

Objectives/Goals

The objective is to quantitatively and qualitatively measure the effects of CdCl2 on the embryonic and vascular development of zebrafish.

Methods/Materials

Zebrafish eggs, paramecium cultures, 96-well black microplates, 40um cell strainers, Cadmium Chloride, FITC-Dextran, and Tricaine Methanesulfonate: Four exptl. groups of 0.1, 0.5, 1, and 2 mg/L of CdCl2 and one control group of 0 mg/L were used. All groups were dyed in FITC and euthanized in tricaine, then scanned in a fluorescence microplate reader.

Results

The control group registered up to 8x higher than the other groups. The highest concentrations (1 and 2 mg/L) were 100% fatal. The exptl. groups were white, weak, apathetic, and malformed, whereas the control group was not.

Conclusions/Discussion

Scanning the fish gave quantitative evidence in addition to the qualitative evidence that Cadmium Chloride is detrimental to the health and vascular development of zebrafish embryos. Thus continued dumping of NiCad Batteries and other sources of Cadmium may result in long term damage to marine ecosystems.

Summary Statement

The project is on the effects that heavy metal CdCl2 has on the vascular development of zebrafish embryos.

Help Received

Teacher mixed toxic solution. Marine Biologist mentor supervised embryonic care.