

The Effects of Ethinyl Estradiol on Danio rerio Embryonic Development

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According to the Center for Disease Control (CDC), roughly four out of five women will use birth control at some point in their lives. After the main hormone, Ethinyl estradiol, runs its course through the body, it is excreted and becomes part of our water system. This brought me to the question: How does Ethinyl estradiol affect Danio rerio, commonly known as zebrafish, egg development? It was hypothesized that the Ethinyl estradiol will negatively impact the zebrafish embryo development and the more that higher concentrations will have greater affect the embryo. Zebrafish eggs were placed into .1 mg of Ethinyl estradiol in one dish and the .2 mg in another. The third dish acted as a control. Check every two hours for 24 hours, then 6 hours for the next 24 hours, and then twice a day until hatched by placing randomly chosen eggs from the container and taking pictures through the microscope. The data showed the embryos developed more slowly in the eggs exposed to Ethinyl estradiol, especially in the eyes. The vertebrae in the variable tests were curved in Trial 1, and due to the high mortality rates in Trial 2, it is unknown how the vertebrae were affected. Mortality was measured in Trial 2 after seeing the mortality rates in Trial 1. In both tests, the eyes of the zebrafish developed later when Ethinyl estradiol was present. The controls had a straight vertebrae compared to the curved vertebrae on the embryos where Ethinyl estradiol was present. The embryos exposed to a higher concentration of Ethinyl estradiol had a much higher mortality before hatching.