Analyzing the Effects of Altretamine Chemotherapy Drug on Drosophila melanogaster Ocular Melanoma Models

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Ocular melanoma is one of the rarer types of aggressive cancer. The only option for someone with this cancer is to undergo radiation or surgery. In both cases, there is a high likelihood of vision being lost. However, most patients have no other option than to undergo one of the two treatments because ocular melanomas are aggressive and spread to other areas of the body, most often to the liver. Chemotherapy is the traditional treatment method if the cancer spreads, however, it is rarely used to only treat ocular melanomas. Altretamine is a chemotherapy drug that is currently used to treat ovarian cancer and is untested for other cancers. This drug could allow patients a much brighter prognosis than current options. In this study, Drosophila melanogaster, commonly known as fruit flies, was chosen due to their similar organ structures to humans. The flies were bred to express eye cancer similar to ocular melanomas in humans. To study the change in eye tumors after administering altretamine, the Leica LAS EZ microscope software was used to take images and then analyzed using ImageJ software to measure changes in the eye tumor size and color. It was determined that the best efficiency dilution is 0.53 mM and 0.053 mM dilutions. Preliminary results show that the drug is reducing the tumor sizes of adult flies. Next steps include analyzing if growing larvae in the drug can also reduce tumor sizes compared to the control, once they are adults.

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