Effects of FeHEDTA Pesticide on Cell Regeneration in Planaria dorotocephala

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Planaria dorotocephala are flatworms that live in freshwater. Planarian have the ability to regenerate when injured or cut in half. Using FeHEDTA, a commercial herbicide, we tested if herbicides could inhibit planarians ability to regenerate. We hypothesized that the herbicide would damage the planarians nervous system and in turn, their regeneration properties. The experiment was designed with (5) cultures of (5) worms each. Two dishes were control groups and three were experimental. The worms in dishes 2-5 were cut approximately ¼ up from the end of their tail side. 10 µL of FeHEDTA was added to dishes 3-5. All worms were measured (mm) for the preceding two weeks to record growth. The presence of FeHEDTA did not directly affect cell regeneration of planarian in a positive nor negative manner. On day 13 of the experiment, dishes 1 and 2 were the longest on average, this was not a continuous trend throughout the experiment. Dishes 3-5 were more active and presented healthier behaviors (Eating and swimming more) than dishes 1-2. FeHEDTA did not affect cell regeneration of planaria but did affect their behaviors and quality of life. We believe a reason for this is a connection to the iron sulfate (active ingredient in FeHEDTA) and oxygenation of planarian cells and tissues. Increased oxygenation would also lead to increased locomotor activity and increased feeding.

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