Effect of Roundup on Planarian Locomotion

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Abstract

Over time, the use of Roundup has been plummeting because of increasing glyphosate-resistant weeds. The main ingredient of Roundup is a toxic chemical called Glyphosate. Glyphosate inhibits a step in the Shikimic acid pathway. It prevents the plants from making proteins needed for plant growth, which has allowed it to become an efficient weed-killer. The purpose of this study is to investigate the effect of a widely used controversial herbicide called Roundup on flatworms called Planaria. The specific Planaria used in this experiment is called Dugesia dorotocephala. Planaria have an extraordinary ability to regenerate after they've been cut into two new individuals. They also have eyespots that act as photoreceptors and they tend to move away from light. The rationale behind using Planaria is that it is a good bioindicator since it occurs in the freshwater and testing effects on it will let us know about the effects on the entire ecosystem. Additionally, we should be very worried about the amount of Glyphosate contamination in our food supply since it has been on the rise. The experiment was conducted on the locomotion of Planaria and was evaluated by counting the number of 1mm by 1mm grid lines passed in a total of 2 minutes. The concentrations of Roundup that locomotion and regeneration were evaluated at were 0mg/L(control), 7mg/L, and 15mg/L. Our results indicate that Roundup inhibits locomotion in Planaria. There was no evidence found for a dose-dependent effect of Roundup on Planaria. Further research will assess alternative herbicides and pesticides to Roundup to see if they have any adverse effects on Planaria. Another future direction is on the exploration of neoblasts cells which allow the Planaria to regenerate. Finally, the future plan is to find an easy way to test the amount of Roundup in the environment.