Investigating the Effects of Glyphosate on Biological Processes Using Drosophila melanogaster as a Model Organism

Kirkland, Ivie (School: Mississippi School for Mathematics and Science)

Glyphosate, the active ingredient used in many herbicides, has seen extensive use, surpassing over 1.6 billion kilograms since 1974. With this widespread use, humans have begun to experience the effects of this chemical, with reports of its presence in urine and estimations suggesting consumption of approximately 1 kilogram of glyphosate in a lifetime. Furthermore, questions have arisen about the potency of this chemical, with mixed debate surrounding whether it significantly affects human health. This project is designed to utilize Drosophila melanogaster as a model organism to test the effects of glyphosate on various biological processes such as growth, vision, survivorship, and reproductive abilities. The hypothesis to be tested: Will exposure of D. melanogaster to increasing concentrations of Glyphosate will lead to dose-dependent changes in various biological parameters compared to the negative control group. Drosophila melanogaster were cultured in controlled environments and split into male, female, and mixed-sex cultures. Abdomen size was observed, eggs produced in mixed cultures were counted, phototactic responses, and survivorship rates were graphed. Results show dose-dependent effects of glyphosate on Drosophila melanogaster. Phototactic responses diminished in males, reduced abdominal sizes were observed in both sexes, and glyphosate led to reproductive sterility. In conclusion, exposure to glyphosate affects Drosophila melanogaster biological processes in many ways. These findings will contribute to achieving health and well-being for all by enhancing understanding of chemicals' impact on organisms' health.

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