The Effect of Microplastics on the Fertility of Caenorhabditis elegans

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The presence of microplastics in the human body has been recently discovered, but little is known about whether they can cause harm to bodily systems. This experiment uses C. Elegans as a basic model for the human reproductive system to find out how polystyrene microplastics affect the fertility of these worms. Because there are many similarities in the basic reproduction process, this study can allow further interpretation of results. For the experiment, worms were split into 2 groups of 3 OP50 E-coli seeded plates each, one group of control and one group treated with 1.0µm polystyrene microplastics. They were left to mature for 3-4 days, then were inspected under a high-power light microscope to find L4 stage worms. These worms were put into a bleach solution in a process called an egg retention assay to reveal how many eggs were in their uterus. Since egg retention is inversely related to fertility, more eggs retained means less eggs laid, and vice versa. To analyze the results, a t-test was used, and it was found that the data was statistically significant, with a P-value of .0492 after testing 75 worms per group with 25 per plate. Furthermore, it was found that the worms treated with microplastics had overall more egg retention than the control worms, and therefore, a decrease in fertility. This experiment showed that the ingestion of microplastics reduced fertility in C. Elegans, and these findings can be used in further research to connect to human health.

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