

Modeling the Effect of Hyperglycemia on the Fertility of *Caenorhabditis elegans*

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Diabetes, characterized by hyperglycemia, affects human fertility. The animal model *Caenorhabditis elegans* is used to research human diseases due to its molecular-level similarities and ethicality, and was used to model the effects of high glucose concentrations on fertility. *C. elegans* were transferred onto 15 experimental plates which were seeded with *E. coli* OP50 containing glucose concentrations in increasing increments of 4 mM from 16 mM to 32 mM, based off glucose levels in human diabetics. After 7 days of growth, the worms were placed into a bleach solution to count their eggs. Data collected partially supported the hypothesis, since a decrease in the number of eggs/worm was observed with a correlation value of -0.93, meaning there was a significant relationship between the egg count and increased concentrations of glucose. A linear decrease was observed in the egg counts ($p\text{-value} < 0.01$): the control (16 mM) had an average of 10.89 eggs/worm, 20 mM had 10.22, 24 mM had 9.44, 28 mM had 7.06, and 32 mM had 4.22. Since *C. elegans* is an animal model for humans, these results can be applied to diabetics, who display high, uncontrolled levels of blood sugar.?

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