Nematode Caenorhabditis elegans': Population Growth Response to Various Sugar Solutions

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The purpose of this project is to understand the effects sugar has on Caenorhabditis elegans and humans. The hypothesis stated High–Fructose Corn Syrup (HFC) would have the greatest effect on the population growth of nematodes. The null hypothesis stated there would be no significant difference between the four treatment groups and control. Predictions for the human taste test stated that age group (under twenty) would display the greatest affinity for (HFC), and (twenty to forty/over forty) would display an affinity for sucrose. Overall (65%) of participants (under twenty) preferred (HFC), (25%) of participants (twenty to forty) preferred (HFC), and (20%) of participants (over forty) preferred (HFC). Four experiments were conducted on population growth of C. elegans. Statistical analysis of variance (ANOVA) was conducted and the results for [F (4, 70); $p<0.05$] degrees of freedom with (Critical value; 2.50) showed that experiment one ($F=0.6576128$), experiment two ($F=0.400777909$), experiment three ($F=1.448905009$), and experiment four ($F=2.5842359$). The t-tests conducted for experiments one and two supported the conclusions made from the (ANOVA). The t-tests conducted for experiment three and four show a significant difference between the control and (HFC). Nematodes in a (10:1) concentration show no significant difference for sugars tested, producing no adverse effects on population growth. Nematodes in a (10:2) concentration, for (sucrose, glucose, and fructose) show no adverse growth effects but the (HFC) group reveals an adverse effect on the population growth of the nematodes. Nematodes in a (10:3) (HFC) concentration reveal drastic adverse effects on population growth.

Awards Won:

University of Arizona: Renewal Tuition Scholarship