

Toxicity of Aspartame Studied in *C. elegans*

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Aspartame is an artificial sweetener found in many dietary foods, including diet soft drinks. Although Aspartame is FDA approved and considered safe for consumption, studies on health-related problems in humans and rodents remain inconclusive, with some evidence for increased body-mass-index and cardiometabolic risk associated with routine intake of nonnutritive sweeteners. In this study, the nematode *Ceanorhabditis elegans* (*C. elegans*) was used as a model biological system to investigate the toxicity of Aspartame. *C. elegans* are easily maintained and are widely used to evaluate the effects of substances and environmental factors on living organisms. Our research compared the toxicity of Aspartame and cane sugar by exposing the *C. elegans* for 285 minutes to concentrations of both substances ranging from 0% to 2%, with six *C. elegans* for each concentration. An activity scale ranging from 0 (dead) to 3 (highly active) was used to quantify the effect of both substances on the *C. elegans*. Our results show a clear trend of lower activity and a higher *C. elegans* mortality rate with increasing concentrations of Aspartame. The nematodes remained at an activity level similar to the control group (0%) for a concentration comparable to the one found in soft drinks (0.001%). For cane sugar, no change of the activity level was observed regardless of the concentration. While our results do not show any effects at concentration levels found in food products, they do reveal toxicity as measured by increased deaths and activity as being directly proportional to increased Aspartame concentrations. This suggests the possibility of harmful effects on animals and humans as a consequence of continued consumption or accidental overdose. A conclusive extrapolation of our results to humans will require a better understanding of the causal effects which cause the change of activity level and mortality rate in *C. elegans*.