The response of Nematodes (*Caenorhabditis elegans*) to Bitter Gourd (*Momordica charantia*)

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Bitter gourd (*Momordica charantia*) is widely used as a vegetable and as a traditional medicine throughout Asia. Antidiabetic, abortifacient, anthelmintic, antimalarial, and anticancer properties are associated with bitter gourd. The objective of the project was to study anthelmintic and antidiabetic properties of bitter gourd (BG) using two strains of *C. elegans*, wild type and daf-2 as models. The daf-2 mutant of *C. elegans* is a useful model for diabetes, because its defective insulin receptor decreases cellular glucose uptake. In order to study anthelmintic properties of BG, both strains of *C. elegans* were grown on E. coli and treated at the second larval (L2) stage with different amounts (0, 100, 250, 500, 1000 μl juice/2.5 ml culture medium) of BG juice for three days and mortality after two days were scored. None of the BG extracts affected 2-day survival for either the wild type or daf-2 strains of *C. elegans*, suggesting water extract BG is not toxic to nematodes. In the second part of the research, *C. elegans* at L2 stages were exposed to 40 mM glucose for five days to allow glucose uptake. After five days, varying concentrations (0, 100, 500, 1000 μl juice) of bitter gourd extract were added and plates were incubated for two additional days. Then worms were washed free of culture medium and unabsorbed glucose, grounded and filtered. Glucose concentration was measured in the nematodes using Sigma procedure #20(GAHK-20). In the wild type, but not daf-2, BG increased the glucose concentration in the nematodes in a dose-dependent manner. This research suggests that BG may facilitate glucose uptake into wild type *C. elegans*, but the defective insulin receptor in daf-2 may block this uptake.


