

Plant derived antifeedants against Codling moth: A new approach and first results

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Cydia pomonella (L.) (Lepidoptera, Tortricidae) is the major insect pest on pome fruit world-wide. Due to severe resistance problems there is a great demand on new plant protection strategies, especially such that are less harmful to the environment. A promising solution is the application of biodegradable plant extracts or pure natural products with feeding deterrent activity. For detection of activity against insects numerous bioassays have been described. Based on previous observations, however, we believed that these tests were not suitable for larvae of *C. pomonella* because results seemed to be biased by intraspecific competition. To optimize bioassay procedures, the influence of intraspecific competition on behavior and survival of neonate larvae was observed. Larvae kept in groups of two up to five individuals were significantly less successful in surviving and accepting food compared to those kept isolated. For this reason we concluded that standard laboratory assays have to be modified for larvae of *C. pomonella*. A new bioassay system avoiding the effect of intraspecific competition is introduced. The methanolic root extract of *Centaurea cyanus* L. (Asteraceae) serves as an example to illustrate sensitivity and reproducibility of the new method. A screening of methanolic extracts of 25 species of Asteraceae, Apiaceae and Lamiaceae was performed using this bioassay. Methanolic extracts of above-ground parts from *Tanacetum vulgare*, *Centaurea cyanus* and *Galeopsis tetrahit*, leaves from *Heracleum sphondylium* and *Pastinaca sativa*, as well as inflorescences from *Erigeron annuus* showed a deterrence index below -60 in a dual choice test and can therefore be considered highly deterrent. Currently bioassay-guided fractionation is being performed to detect the active constituents of these plant extracts.