



Toxic effects of ethanolic extracts synthesized from five different medicinal plant species of Kashmir valley against Rose aphid, *Macrosiphum rosae* (L.) (Hemiptera: Aphididae)

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ABSTRACT

Use of eco- friendly naturally occurring plant products in the form of ethanolic extracts (of five plant species viz. *Artemisia absinthium*, *Euphorbia helioscopia*, *Iris germanica*, *Viola odorata* and *Mentha longifolia*) for the management of Rose aphid, *Macrosiphum rosae* (L.) (Hemiptera: Aphididae) under laboratory conditions was assayed to reduce the dependence on the unwise use of synthetic pesticides against this insect pest species. The efficacy of the five extracts was studied via No choice bioassay employing leaf dip technique. Three different concentrations of 1%, 2% and 3% were used to check the efficiency of prepared plant extracts; 24, 48, 72, 96 and 120 hrs post treatment of *M. rosae* in the laboratory. For comparison purposes, leaves treated with distilled water served as Control. Aphid mortality data sets subjected to analysis of variance (One- way ANOVA) by Duncan's test at 5% revealed that mortality of rose aphid varied significantly at all the three treatment concentrations of five plant extracts in comparison to Control. Further, the ethanolic extract of *E. helioscopia* at 3% concentration performed better than the rest of ethanolic extracts in reducing the rose aphid populations, inflicting the highest mean aphid mortality percentage of 72.35% with least LC_{50} value of 1.65%. The observed order of aphid mortality inflicted by five ethanolic extracts was *E. helioscopia* > *I. germanica* > *A. absinthium* > *V. odorata* > *M. longifolia*. The Regression analysis of the mortality data gave Regression coefficient (R^2) close to 1 which was indicative of Positive correlation existing between X (concentration of extracts) and Y (mortality of aphids) variables. In other words, as the concentration of plant extracts is increased, the aphid mortality percentages also show a subsequent increase. The Chi square test of association further validated the existing relationship between concentration of extracts and aphid mortality as χ^2 value was significant at $p \leq 0.05$ for all the five extracts. The study demonstrates that the plant extracts represent a novel and cost effective approach with minimal residual effects and wide public acceptance against rose aphid, *M. rosae*.

Keywords: *Artemisia absinthium*, *Euphorbia helioscopia*, *Iris germanica*, *Macrosiphum rosae*, *Mentha longifolia*, No choice bioassay, One way ANOVA, *Viola odorata*