The deleterious effects of plant extracts on insects can be manifested in several ways including toxicity, mortality, antifeedant, growth inhibition, suppression of reproductive behavior and reduction of fecundity and fertility. Unlike synthetic insecticides, plant chemicals have varying mechanisms of activity against insects, which are not always the knock down kind. The slow but long lasting action of neem is a good example of this mechanism. The question of whether data sets of different time intervals have an association that can be made out early during the course of bioassay needs to be answered. Therefore an attempt was made to know, if there is any association in the mortality patterns at 96 h after treatment and at adult emergence of diamond back moth, (DBM) *Plutella xylostella* L., the test insect of the present study.


The deleterious effects of plant extracts on insects can be manifested in several ways including toxicity, mortality, antifeedant, growth inhibition, suppression of reproductive behavior and reduction of fecundity and fertility. Unlike synthetic insecticides, plant chemicals have varying mechanisms of activity against insects, which are not always the knock down kind. The slow but long lasting action of neem is a good example of this mechanism. The question of whether data sets of different time intervals have an association that can be made out early during the course of bioassay needs to be answered. Therefore an attempt was made to know, if there is any association in the mortality patterns at 96 h after treatment and at adult emergence of diamond back moth, (DBM) *Plutella xylostella* L., the test insect of the present study.

Therefore it appears that in the case of seed extracts some relationship between the early and late mortality data can be expected. However, the foregoing in general, indicate a lack of association between the response patterns of larvae to plant extracts of any kind at early and late stages of the bioassay. On the other hand, it is possible that once exposed, the chemical might remain largely unaffected in the insect system, so that it keeps interfering with the vital hormonal balances even after the insect has been removed from the direct exposure to the chemical. This results in causing mortality of the test insects over an extended period, which was observed in the present study up to the adult emergence stage of *P. xylostella*. Owing to varying manifestations of this kind of chemical and the insect interactions, the mortality of the test insects are not uniformly spread over all stages of growth and leads to a situation of poor correlations.

**Fig. 1.** Relationship between percent mortalities at 96h post treatment and at adult emergence at 20% concentrations of different extracts of Euphorbiaceae plants against II instar larvae of diamondback moth, *P. xylostella*.
between the death at 96 h and at adult emergence, when compared across different extracts.

The results also revealed that there was no strong association between response pattern of insects to plant extracts at early (96h post treatment) and late stages (at adult emergence) of the bioassays. Many plants have defense chemicals that have varying mechanisms of activity against insects, rather than direct toxicity. This in essence resulted in slow death of the insect and results also substantiated that plant chemicals are relatively slow acting chemicals. Thus the results suggest that the early observations alone are not reliable indicators of the complete potency of plant extracts, where the activity can extend up to the adult stages. In other words, the trends in mortality at early stages may not provide a complete picture of the end results in bioassays of plant extracts against insects.

REFERENCES