

TOXICITY OF PETKOLIN AGAINST COTTON APHIDS (HEMIPTERA: APHIDIDAE)

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(Received November 19, 1966)

Aphicidal action of Petkolin-A, Petkolin-M and Petkolin-S, have been studied under laboratory condition against adult apterous agamic female cotton aphid, *Aphis gossypii* Glover. Results have been compared with other chlorinated insecticides, e.g., BHC (benzene hexachloride) and Endrin. It was found that Petkolin-S was as effective as BHC and more toxic than Endrin.

Introduction

Cotton aphid, *Aphis gossypii* Glover, is widely distributed throughout the cotton-growing regions of the world.¹ It attacks all vegetables and higher plants of forests.² In India it has been recorded on cotton (*Gossypium herbaceum*), potatoes (*Solanum tuberosum*), chilly (*Capsicum* sp.), hollyhock (*Althea rosea*), Indian mallow (*Abutilon indicum*), lady's finger (*Hibiscus esculentus*), brinjal (*Solanum melongena*), turi (*Luffa* sp.), Crotalaria juncea, guava (*Psidium guajava*), teak³ (*Tactona grandis*), *Amaranthus spinosus*, *Cassia* sp., and *Argemone mexicana*.⁴ Different species of aphids have been reported from Pakistan.⁵ Cotton aphid is a polyphagous feeder and has been recorded on cotton crops in Dacca, Chittagong, Mymensingh, Comilla, Jessore and Rangpur districts in East Pakistan. It has also been recorded on cucurbitaceous vegetables and from all cotton-growing areas of West Pakistan.⁵

Because of the migratory habits, host alternation, and sucking or piercing type of feeding habits, coupled with remarkable reproductive powers, aphids control measures become very difficult. Many Indian workers⁶⁻¹¹ have tried to control this pest but not much attention has been paid to control it in Pakistan.

The present investigation was undertaken with a view to evaluate the aphicidal activities of the new pesticidal products^{12,13} that have been obtained by chlorinating indigenous and imported petroleum fractions.¹⁴

Materials and Methods

A detailed account of the method has already been described.¹⁵ Cotton aphids, *Aphis gossypii* Glover, were reared in the laboratories at a temperature of 32-35°C and relative humidity of 65±5%. The adult apterous agamic female aphids of known ages were used for each test. Solutions Petkolin-A, Petkolin-M and Petkolin-S (1-7%) were prepared in acetone, and 0.6 ml

of the solution was sprayed from each formulation. Spraying was done by means of S-T-4 Laboratory Spray Tower at a working pressure of 3 lb/in². The time for 50% and 100% mortality was noted. Aphids were considered dead if they showed no movement of legs and antennae when disturbed by a needle. The percent mortalities were calculated by Abbott's¹⁶ formula. Each experiment was repeated twelve times along with a control. The toxicity of the new pesticides was compared with that of BHC and Endrin (Technical grades).

Results

The lowest percentage concentration (1%) of Petkolin-S, Petkolin-A and Petkolin-M, gave 50% mortality in 35, 47 and 50 min and 100% mortality in 76, 95 and 99 min respectively. No revival was noted after 24 hr. Similarly, the highest percentage concentration (7%) of Petkolin-S, Petkolin-A and Petkolin-M, took 16, 19 and 27 min for 50% mortality and 40, 42 and 52 min for 100% mortality respectively. Mortalities obtained with different concentrations of Petkolin-S, Petkolin-A and Petkolin-M, have been shown in histograms (Figs. 1-6). In similar experiments,

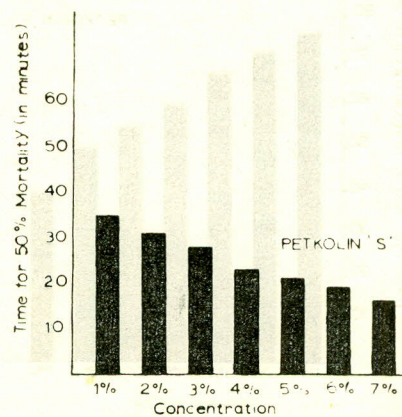


Fig. 1.—Histogram showing 50% mortality with various concentrations of Petkolin-S against cotton aphids.

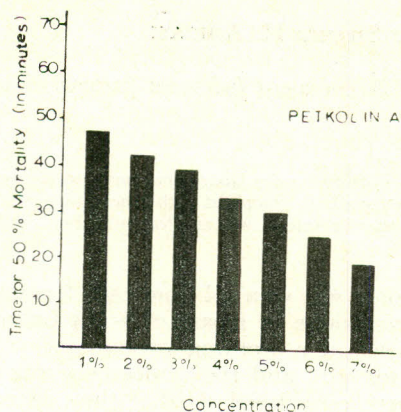


Fig. 2.—Histogram showing 50% mortality with various concentrations of Petkolin-A against cotton aphids.

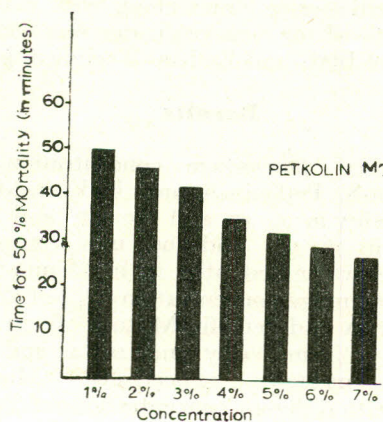


Fig. 3.—Histogram showing 50% mortality with various concentrations of Petkolin-M against cotton aphids.

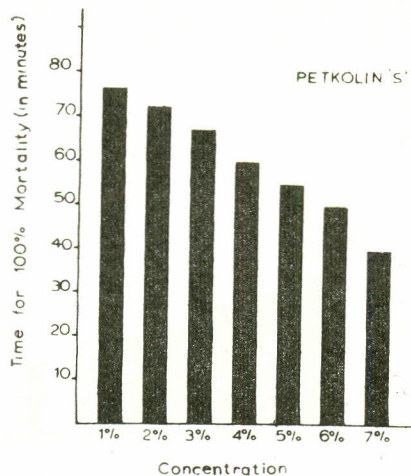


Fig. 4.—Histogram showing 100% mortality with various concentrations of Petkolin-S against cotton aphids.

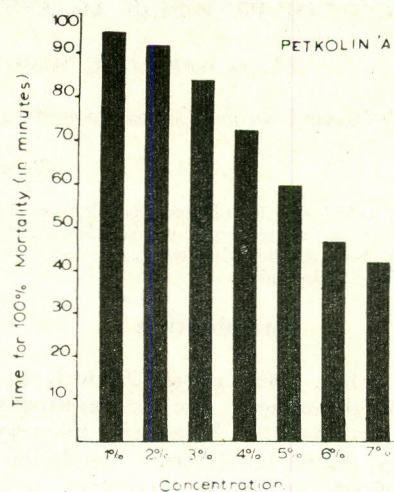


Fig. 5.—Histogram showing 100% mortality with various concentrations of Petkolin-A against cotton aphids.

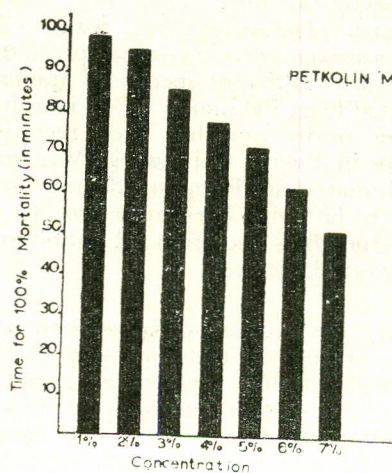


Fig. 6.—Histogram showing 100% mortality with various concentrations of Petkolin-M against cotton aphids.

BHC gave 50% mortality with 1% concentration in 38 min, whereas Endrin took 40 min. Similarly, 1% solution of BHC and Endrin gave 100% mortality in 75 and 80 min, respectively.

As a result of the present investigations it may be concluded that Petkolin-S was as toxic as BHC and was definitely more so than Endrin against cotton aphids.

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