

## OVICIDAL AND LARVICIDAL ACTIONS OF PETKOLIN AGAINST RED SPIDER MITES (ACARINA:TETRANYCHIDAE)

(Mrs.) TASNEEM AHMED and M. ANWARULLAH

Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

(Received March 20, 1968)

Toxicity of Petkolin A, Petkolin M and Petkolin S has been studied in the Laboratory against eggs and larvae of red spider mites, *Tetranychus telarius* (L.). Results were compared with other standard chlorinated acaricides such as Aramite [2-(*p*-*t*-butylphenoxy)isopropyl-2-chloroethyl sulphite), Chlorobenzilate (ethyl 4,4'-dichlorobenzilate), and Ovex (*p*-chlorophenyl-*p*-chlorobenzene sulphonate).

### Introduction

In continuation of the previous work,<sup>1</sup> investigation was carried out to evaluate the ovicidal and larvicidal potentialities of the new pesticidal products<sup>2,3</sup> that have been obtained through the chlorination of indigenous and imported petroleum cuts by Qureshi.<sup>4</sup>

### Materials and Methods

**Criteria of Mortality.**—Larvae were considered as dead if they failed to crawl forward when prodded with a needle. "Live eggs" were calculated on the basis of hatched nymphs found. Eggs which do not hatch were listed as "dead". All percentages are based on total living and dead forms found. Mortality counts were made with the low power of a stereoscopic microscope.

**Ovicidal Effect.**—Five adults females were placed on the leaf of bush bean (*Phaseolus vulgaris*). After 48 hr they were destroyed and the number of eggs

laid counted. The leaf was then detached from the plant and dipped in different concentrations of the candidate materials for a period of 3 sec. After that it was kept under laboratory conditions ( $30 \pm 2^\circ\text{C}$  and  $75 \pm 5$  R.H.) on soaked cotton in a petri dish. The record of hatched and unhatched eggs was taken after a week.

**Immediate Effect on Immature Forms.**—Again five adults females were placed on each leaf and left for 48 hr, then removed with the help of a camel hair brush. Five days later when all the hatched forms were in the larval or protonymphal stages, the leaf was sprayed by means of the S.T.-4 Laboratory Spray Tower, and mortality checked after 48 hr. Four replicates were taken in all instances.

### Results

Eggs dipped in 1% Petkolin M gave 68% mortality after 72 hr, whereas those treated with 5% gave 100% mortality. In similar experiments 0.5% Aramite and 0.5% Chlorobenzilate

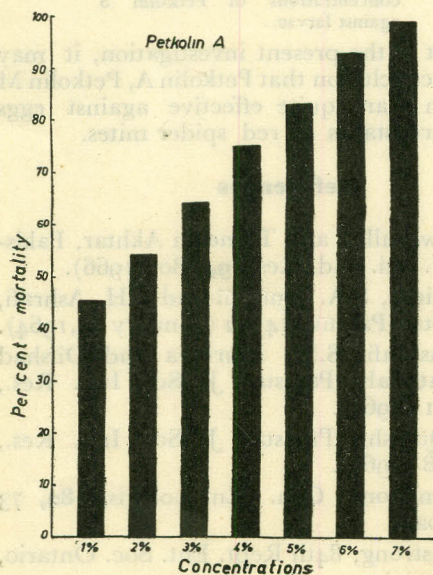


Fig. 1.—Histogram showing per cent mortality with various concentrations of Petkolin A against eggs.

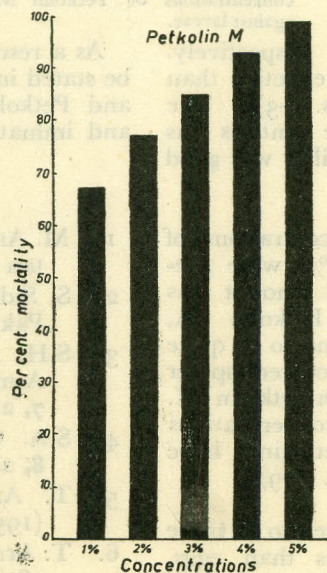


Fig. 2.—Histogram showing per cent mortality with various concentrations of Petkolin M against eggs.

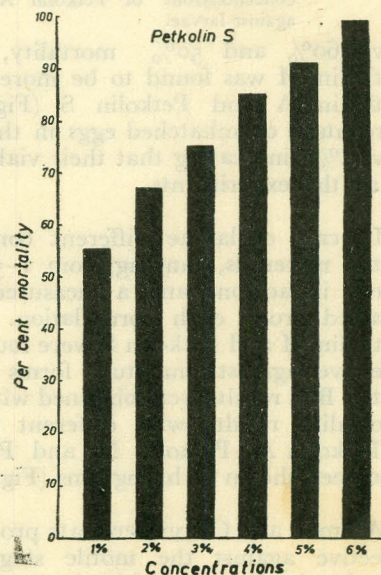


Fig. 3.—Histogram showing per cent mortality with various concentrations of Petkolin S against eggs.

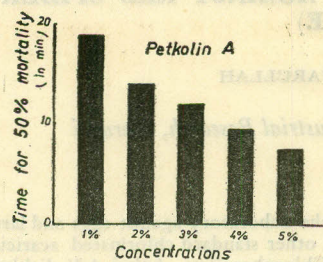


Fig. 4.—Histogram showing 50% mortality with various concentrations of Petkolin A against larvae.

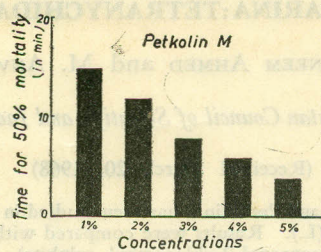


Fig. 5.—Histogram showing 50% mortality with various concentrations of Petkolin M against larvae.

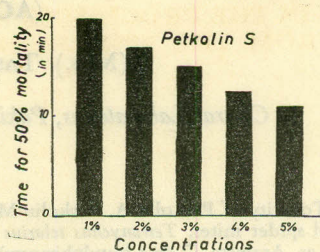


Fig. 6.—Histogram showing 50% mortality with various concentrations of Petkolin S against larvae.

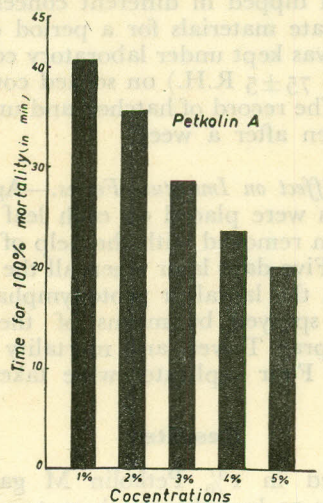


Fig. 7.—Histogram showing 100% mortality with various concentrations of Petkolin A against larvae.

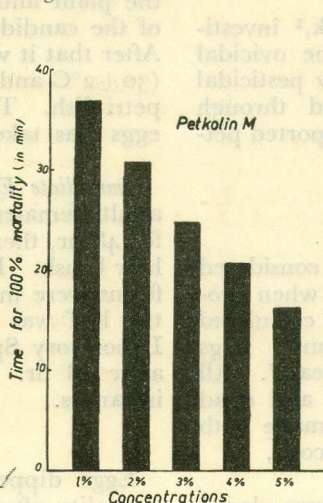


Fig. 8.—Histogram showing 100% mortality with various concentrations of Petkolin M against larvae.

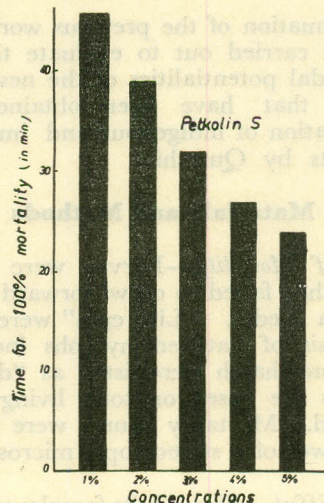


Fig. 9.—Histogram showing 100% mortality with various concentrations of Petkolin S against larvae.

gave 60% and 50% mortality, respectively. Petkolin M was found to be more effective than Petkolin A and Petkolin S (Figs. 1-3). The percentage of unhatched eggs in the controls was low (4%) indicating that their viability was good in all the experiments.

In case of larvae different concentrations of tested materials, ranging from 1-5%, were prepared in acetone and a measured amount was sprayed from each formulation. Petkolin A, Petkolin M and Petkolin S were found to be quite effective against immature forms of red spider mites. Best results were obtained with Petkolin M. Mortality results with different concentrations of Petkolin A, Petkolin M and Petkolin S have also been shown in histograms (Figs. 4-9).

Aramite and Chlorobenzilate proved to be more effective against the motile stages than eggs. Results obtained with Aramite confirmed those of Armstrong<sup>5,6</sup> Mailloux *et al.*<sup>7</sup> Ovex on the other hand showed insignificant larvicidal action.

As a result of the present investigation, it may be stated in conclusion that Petkolin A, Petkolin M and Petkolin S are quite effective against eggs and immature stages of red spider mites.

#### References

1. M. Anwarullah and Tasneem Akhtar, Pakistan J. Sci. Ind. Res., **9**, 180 (1966).
2. S. Siddiqui, S.A. Qureshi and S.H. Ashrafi, Pakistan Patent 114302 (January 14, 1964).
3. S.H. Ashrafi, S.M. Murtuza and Dilshad Asmatullah, Pakistan J. Sci. Ind. Res., **7**, 211 (1964).
4. S.A. Qureshi, Pakistan J. Sci. Ind. Res., **8**, 248 (1965).
5. T. Armstrong, Can. Entomologist, **82**, 73 (1950a).
6. T. Armstrong, 84th Rept. Ent. Soc. Ontario, 38 (1953).
7. M. Mailloux and F.O. Morrison, J. Econ. Entomol., **55**, 479 (1962).