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Research Note

TOLERANCE OF *CULEX QUINQUEFASCIATUS* SAY, 1823 (DIPTERA: CULICIDAE) TO METHOPRENE IN CUBA

AGUSTIN NAVARRO ORTEGA; MARIA DEL CARMEN MARQUETTI; SURIA VALDES & FRANCISCA A. GARCIA

Instituto de Medicina Tropical "Pedro Kourí", Departamento Control de Vectores, Ave. 15 y calle 200, Siboney, Playa, Ciudad de La Habana, Cuba

Considerable attention has been focused on the use of insect growth regulators against mosquito larvae due to their high selectiveness and effectiveness (F. Darriet et al., *WHO/VBC/85, 916;* M. S. Mulla & H. A. Darwazeh, 1989, *J. Amer. Mosq. Control Assoc., 4:* 322-325).

There is no reference in Cuba on the use of methoprene, an insect growth regulator of juvenoid type, against mosquitoes, and we initiated the current studies in order to generate data on the biological activity of this chemical.

The present study concentrated on laboratory susceptibility evaluation of this compound on fourth early instar larvae of *Culex quinquefasciatus* Güines strain obtained from a laboratory colony established from an agricultural area from the municipality of the same name, since 1985. A susceptible strain from Montpellier, France was also used in the study as control.

Three tests were done for each mosquito strain, and each test consisted of 5 concentrations of the chemical, utilizing 3 replicates per concentration. Mortality readings were taken daily until all organisms died or reached the adult stage. Tests were done with 1 ml ethanol solution containing the prescribed amount of the chemical added to 199 ml of distilled water containing 25 mosquito larvae in a slightly tapered 500 ml glass jar. Per cent mortality obtained (up to the adult stage) at each concentration tested were subjected to probit analysis (D. J. Finney, 1962, *Cambridge, Univ. Press,* 318 p.) using an Victor V286 computer according to the program of M. Raymond (1985, *Cahiers ORSTOM, 23:* 117-121). All bioassays were conducted under laboratory conditions with a water temperature of 27 ± 1 °C.

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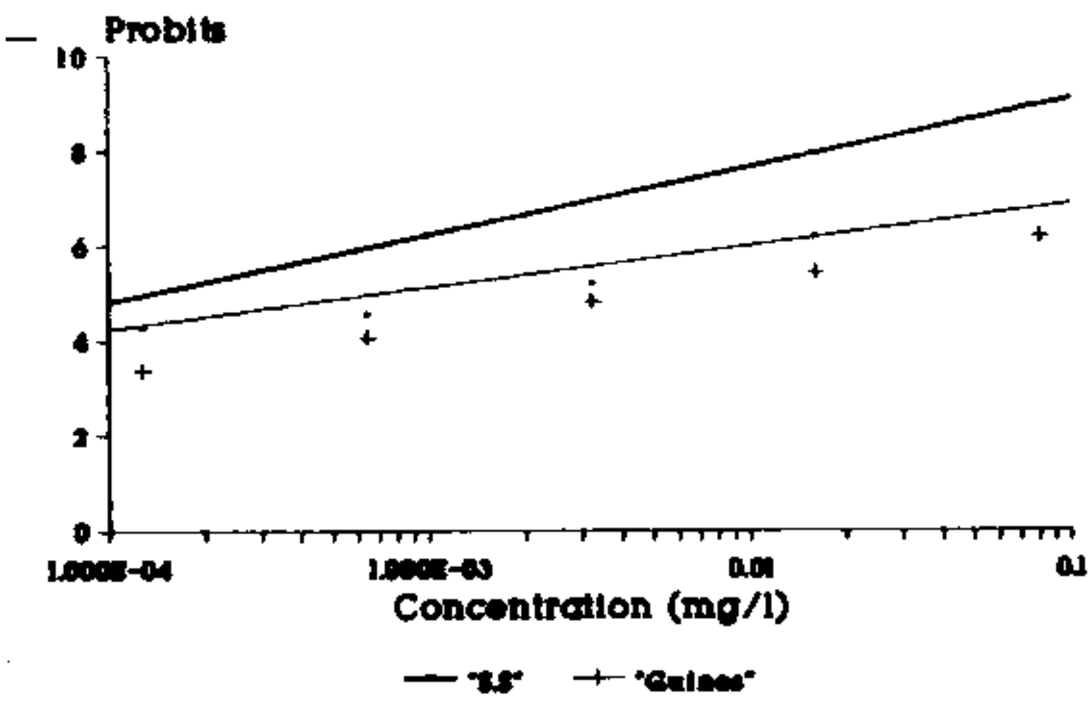

Combined data of the *Culex quinquefasciatus* larval bioassays.

Regression lines shown in Fig. represent combined data of the *C. quinquefasciatus* larval bioassays. Both LC50 and LC90 values show methoprene to be less toxic ($P < 0.05$) to Güines strain (LC50 = 0.0050 mg/1; LC90 = 0.1450 mg/l) than to SS strain (LC50 = 0.0006 mg/l; LC90 = 0.0175 mg/l) with LC50 and LC90 ratios of 8.3 and 8.1 X respectively. These results show that the *C. quinquefasciatus* species presents tolerance to methoprene since resistant ratios in mosquito larvae with values less than 10X indicate tolerance as defined by A. W. A. Brown & R. Pal (1971, *WHO Monogr. No. 5,* 79 p).

As methoprene has been never used in this municipality, the tolerance here observed could be explained by the occurring of cross resistance in *C. quinquefasciatus* larvae to the other currently used insecticides both in Public Health and in Agriculture.