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RESEARCH NOTE

SUSCEPTIBILITY OF *LUTZOMYIA LONGIPALPIS* TO DELTAMETHRIN

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Control of phlebotomine sandflies was first achieved in Brazil by L. M. Deane et al. (1955, *Rev. Brasil. Malariol. Doen. Trop., 7:* 131-141) in a focus of visceral leishmaniasis transmitted by *Lutzomyia longipalpis* and treated with DDT. Resistance of sandflies to DDT and dieldrin was recorded in *Phlebotomus papatasi* in India (e. g. S. J. Rahman et al., 1982, *J. Commun. Dis., 14:* 122-124). The same has not been so far recorded in Brazil, but alternative insecticides are welcome owing to the undesirable effects of DDT.

In this note we report on the susceptibility of *Lu. longipalpis* to deltamethrin [(s)-α-cyano-m-phenoxybenzil (1R-3R)-3-(2,2 dibromovinyl) 2,2-dimethylcyclo-propano-carboxylate], a photostable pyrethroid crystal-clear odorless powder.

Female sandflies, collected with human bait at the Lapinha cave in Lagoa Santa, state of Minas Gerais, were kept in cages and given a bloodmeal at the laboratory. Then they were exposed to the insecticide following the instructions of the WHO Technical Report No. 443, 1970, and using test kits for small hematophagous insects provided by WHO. Deltamethrin-impregnated papers were prepared by the Chemistry Laboratory of the Centro de Pesquisas Renée Rachou (CPRR).

For each of the six tests eight different concentrations were used (0.25, 0.5, 1.0, 2.0, 4.0, 6.0, 8.0 and 10.0 mg/m^2). During the experiments temperature and relative humidity were maintained at 25^o ± 1^{o}C and 82-85%, respectively.

The Table shows the number of sandflies used, mortality for each insecticide concentration and for the control group. A gradual increase in death percentage was observed as the insecticide concentration increased. Death rate changed from 10.8% for the concentration 0.25 mg/m^2 to 100% for 10 mg/m^2. The LC50 for deltamethrin was 2.5 mg/m^2 or 0.00025%.

TABLE

Susceptibility of *Lutzomyia longipalpis* to deltamethrin

Deltamethrin (concentration mg/m^2)	Number of tests and numbers of sandflies							Number of tests and numbers of dead sandflies							
	I	II	III	IV	V	VI	Total	I	II	III	IV	V	VI	Total	%
0.25	15	30	30	30	25	18	148	4	6	3	2	–	1	16	10.8
0.5	15	30	30	30	25	18	148	4	7	7	3	4	2	27	18.2
1	15	30	30	30	25	18	148	5	7	8	4	4	3	31	20.9
2	15	30	30	30	25	18	148	7	22	5	12	11	5	62	41.8
4	15	30	30	30	25	18	148	10	24	25	19	16	9	103	69.6
6	15	30	30	30	25	18	148	13	29	29	28	23	12	134	90.5
8	15	30	30	30	25	18	148	14	28	27	29	22	16	136	91.9
10	15	30	30	30	25	18	148	15	30	30	30	25	18	148	100
Control	15	30	30	30	25	18	148	–	–	–	–	–	–	–	–

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Tests of susceptibility of *Lu. longipalpis* to insecticides have already been performed using DDT and dieldrin. The LC for DDT was 0.55% and for dieldrin 0.24% (A. R. Falcão, 1963, *Rev. Brasil. Malariol. Doen. Trop., 15:* 411-415). The LC for deltamethrin is approximately 200-fold less than for DDT and 1,000-fold less than for dieldrin. These results show the great susceptibility of *Lu. longipalpis* to deltamethrin.

We conclude that, using formulations with low concentrations of active substances, good results will probably be obtained in the control of sandfly populations in foci of leishmaniasis.

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