ABSTRACT

Effects of chitin synthesis inhibitor, Dimilin or 1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl) urea, on the larval stages of Aedes aegypti, Culex quinquefasciatus, Toxorhynchites splendens and on the fingerlings of Poecilia reticulata were investigated under laboratory conditions ($25 \pm 1^{o}C$ and 64 ± 3 % RH). The LC_{50} values of the second, third and fourth instar larvae of A. aegypti and C. quinquefasciatus were 0.00048, 0.00081 and 0.00101 mg/l, respectively, and 0.00039, 0.00067 and 0.00079 mg/l, respectively. The LC_{50} values of T. splendens were 0.00055, 0.00099, 0.00104 and 0.00154 mg/l for the first, second, third and fourth instar larvae respectively. The mortality rates of mosquitoes were found to be relatively high in larval stages. The older instar larvae were less susceptible to Dimilin than the younger ones. C. quinquefasciatus was the most sensitive species to the compound. The observed morphological aberrations of the mosquitoes were characterized as : (1) dead larvae, (2) larval-pupal intermediate form, (3) dead pupae, and (4) incomplete emergence adults.

The 96-hr. LC_{50} value of Dimilin for the fingerlings of P. reticulata was 120.7 mg/l. The fish, exposed to the compound at dosages ranging from 1 to 20 mg/l for 60 days, showed no adversed effects to the compound.

The persistence of Dimilin when tested against the fourth instar larvae of *A. aegypti* at the dosages of 0.0034, 0.1 and 1.0 mg/l under laboratory conditions and open air conditions ($26 \pm 2^{o}C$ and 72.5 ± 7 % RH) was highly effective in preventing successful adult emergence for 2, 10, and 14 weeks, and for 2, 8, and 13 weeks, respectively. The persistence of the compound when tested against the fourth instar larvae of *C. quinquefasciatus* at the dosages of 0.00286, 0.1, and 1.0 mg/l under laboratory and open air conditions were highly effective in preventing successful adult emergence for 2, 12, and 15 weeks, and 2, 9, and 14 weeks, respectively.