

Insecticide resistance in *Aedes aegypti* and *Aedes albopictus* populations from Rio de Janeiro State, Brazil

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Brazil is experiencing outbreaks of dengue, chikungunya and Zika. The control of *Aedes aegypti*, the vector of these arboviruses, is the only option to prevent their spread. Chemical control remains the backbone of any control strategy to restrain these diseases. However, the exaggerated use of these compounds has been selecting resistant populations to insecticides not only in Brazil but worldwide. The main known physiological mechanisms selected for insecticide resistance (IR) are increase in the detoxification activity and mutation in the target site of the insecticide. The monitoring of IR levels as well as the distribution of the selected mechanisms are therefore important to improve the efficiency of the chemical control. Herein we evaluated IR in natural populations of *A. aegypti*, and its counterpart *Aedes albopictus*, in different regions of Rio de Janeiro State, which accounts for a large number of cases of those three diseases. Ovitrap were installed in Campos dos Goytacazes (CG), Vassouras (VS), Mangaratiba (MG), Nova Friburgo (NF), Volta Redonda (VR), Itaburá (IB), Itaperuna (IP) and Iguaba Grande (IG) cities. WHO-like test tube adult bioassays were performed with F1 or F2 generations with the adulticides pyrethroid deltamethrin and organophosphate malathion. *A. aegypti*: *A. albopictus* ratio varied from 1:0 (CG) to nearly 1:1 (VS). Enough eggs were not collected from NF and VR. Preliminary results so far indicated that all *Ae. aegypti* populations are resistant to deltamethrin 0.05%, but not to malathion 0.7%, with alteration observed in IB and IG. *A. albopictus* populations from IP and VS were susceptible for both insecticides. We are now concluding larvicide bioassays, genotyping for *kdr* mutations and evaluating the expression level of the main genes related with metabolic resistance. These results may contribute to a better understanding of IR in *Aedes* and consequently improve its control.