Proceedings of the Tenth International Conference on Urban Pests
Rubén Bueno-Marí, Manuel, Tomas Montalvo, and Wm. H Robinson (editors) 2022
CDM Creador de Motius S.L., Mare de Deu de Montserrat 53-59,
08930 Sant Adrià de Besòs, Barcelona, Spain

LABORATORY EVALUATION OF AN INSECTICIDE PAINT CONTAINING PROPOXUR AGAINST SEVERAL STRAINS OF AEDES AEGYPTI MOSQUITOES

A. VILLEGAS TREJO[1], J. CASTAÑEDA GÓMEZ[2], J. PRUÑONOSA SANTANA[3], G. ZURITA PÉREZ[4], J. MÉNDEZ GALVÁN[5], AND I. GIL TORRÓ[6]

[1]CEISP, Centro de Evaluación e Investigación en Salud Pública, Cuernavaca, Morelos, Cuernavaca, Mexico
[2]Instituto Nacional de Salud Pública, Cuernavaca, Mexico
[3]Consultoría para la Evaluación e Investigación en Salud Pública, Cuernavaca, Mexico
[4]Servicios de Salud de Oaxaca. Programa estatal de Vectores, Oaxaca, Mexico
[5]Hospital Infantil del México "Federico Gómez, Ciudad de México, Mexico
[6]Inesfly Corporation S.L., Paiporta, Spain

Abstract Arboviruses transmitted by *Aedes* mosquitoes becomes a serious public health problem in numerous regions with increasing worldwide cases of dengue, zika and chikungunya infections. The absence of effective vaccines leads the prevention of these diseases to be focused on vector control activities. The endophilic and endophagic behaviour of *Aedes aegypti* mosquito provides opportunities of interior surfaces treatments with insecticides for controlling adult population and achieving bite prevention. Among the available insecticide classes, pyrethroids are being replaced in the recent years because of the emergence of *Aedes* resistant populations across the world. In this study we evaluated the residual efficacy of a novel propoxur based insecticide paint applied on different housing materials against several *Ae. aegypti* strains under laboratory conditions. Susceptible (Rockefeller) and pyrethroid resistant (Tapachula) laboratory colonies were used in the bioefficacy assays in addition to wild individuals of a pyrethroid resistant area of Mexico (Pochutla). WHO cone bioassay (30 min exposure time) was conducted to measure the delayed mortality (24 hours) exerted by the insecticide paint (Carbapaint 10, Inesfly Corporation S.L) applied on previously primed cement, adobe and wood. A free flying assay was performed to assess mosquito mortality in a painted structure baited with a caged animal. In the cone tests, Rockefeller strain mosquitoes were completely killed by the paint applied on cement and wood in all assays conducted for 3 months, while Tapachula adults showed 99.2% and 94.4% mortality for wood and cement respectively as a mean value of 7 assays conducted since day 1 to 12 months after paint application. Adobe and cement substrates treated with the propoxur paint provided mortality higher than 80% at month 18 after application, with an average efficacy of 93.7% and 97.5% respectively. The animal baited assay showed a 6 months mean mosquito mortality of 80.4% for the painted chamber and 20.6% for the control one when Pochutla strain females were released for 24 hours. Our findings demonstrate a high efficacy and long-lasting effect of the propoxur based paint for controlling wild collected and laboratory reared *Aedes aegypti* mosquitoes, so becoming a promising tool for arbovirus transmission prevention.

Key words *Aedes aegypti*, paint, laboratory, efficacy, resistant