

Abstracts

deltamethrin in 3 populations: Tres Esquinas (RR= 8.06), Pampanito (RR= 6.9), and Lara (RR= 9.05). Ureña proved susceptible with RR=3.4. GST was found in females from Lara and Ureña exceeding the resistance threshold established by NO strain, suggesting cross-resistance with DDT. Pampanito showed increased levels of β esterases, GST and insensitive acetylcholinesterase (iAChE), while Tres Esquinas showed all enzymes elevated with the exception of GST in comparing with NO strain suggesting resistance to different insecticide groups.

44 **KDR mutation (val1016) in *Aedes aegypti* (L) from Mexico**

Gustavo Ponce, gponcealfa@gmail.com, Adriana E. Flores, Karla Saavedra, Saul Lozano and William C. Black IV

Pyrethroids are commonly used as mosquito adulticides and the evolution of resistance to these compounds is a major threat to public health. 'Knockdown resistance' to pyrethroids (KDR) is frequently caused by nonsynonymous mutations in the voltage-gated sodium channel transmembrane protein (para) that reduce pyrethroid binding. Early detection of Kdr is critical to the development of resistance management strategies in mosquitoes including *Aedes aegypti*, the most prevalent vector of dengue and yellow fever viruses. Brengues et al. described 7 novel mutations in hydrophobic segment 6 of domain II of para in *Ae. aegypti*. We found 2 new mutations never detected in Latin America in these same codons. A transition in the first position of codon 1011 encodes a Val replacement while a transition in the first position of codon 1016 encodes an Iso replacement. The present study analyzed the rise of KDR mutation in 14 states of Mexico, over the past 7 yr and determined that the mutation KDR has been increasing considerably, mainly in the state of Veracruz, where people like Martinez de la Torre, Tantoyuca and Poza Rica did not present frequencies KDR in 2000 and for 2007 frequencies increased to 0.43, 0.38 and 0.70 respectively.

45 **Susceptibility status of *Aedes aegypti* to cyfluthrin and permethrin in Atlántico, Colombia**

Ronald Y. Maestre Serrano, rmaestre22@yahoo.com and Sergio J. Goenaga-Olaya

The use of insecticides for the control of dengue fever (DF) in the Department of Atlántico for more than 3 decades has generated the appearance of resistant populations to temephos, fenitrothion, lambda-cyhalothrin and dichlorodiphenyltrichloroethane (DDT). It is necessary to evaluate other insecticides as an alternative for the chemical control of the disease. Objective: to evaluate the susceptibility status to cyfluthrin and permethrin in 4 populations of *Aedes aegypti* of the Department of Atlántico, Colombia. Bottle bioassays were performed following the Center for Disease Control and Prevention methodology, using diagnostic doses for cyfluthrin (25 $\mu\text{g/ml}$) and permethrin (21.5 $\mu\text{g/ml}$) on *Ae. aegypti* mosquitoes (F1) from the municipality of Soledad, Puerto Colombia and Juan de Acosta in the Department of the Atlántico during 2009. Three repetitions, each with 4 replicates and 1 control, were carried out. Susceptibility to cyfluthrin and permethrin was registered in the evaluated populations (mortality rate: 100%). The use of insecticides cyfluthrin and permethrin is recommended as an alternative control measure for dengue fever in Atlántico, Colombia.

46 **Enzymes associated with pyrethroid resistance in *Aedes aegypti* (L.) from Veracruz, Mexico**

Brenda G. Silva, silvaqbp@gmail.com, Selene M. Gutierrez, Ma.Cristina Bobadilla, Gustavo Ponce and Adriana E. Flores

We have used existing biochemical assays to identify and document mechanisms of resistance of 7 populations of *Aedes aegypti* from Veracruz, Mexico. Baseline information on susceptibility of *Ae. aegypti* showed resistance ratios from 10X to 675X to d-phenothrin, permethrin, deltamethrin, lambda-cyhalothrin, bifenthrin, cypermethrin, alpha-cypermethrin and z-cypermethrin. Results indicate that esterases (alpha and beta) are the main resistance mechanisms in pyrethroid-selected populations and less frequent Glutathione-S-transferase and Oxidases.

47 **Evaluation of a paint with microencapsulated insecticides for the control of vectors and arachnids**

Jorge F. Mendez-Galvan, jorge.f.mendez@gmail.com, Martin Gaspariano, Maria E. Barrera, Yelsi Hernández, Alicia Melo, Ciro Lopez, Jose Santos and Pilar Mateo

Vectors and arachnids nest in houses and improving the house can help control them. For this reason, we evaluated a paint with microencapsulated insecticides (Chlorpyrifos 1.5%, Diazinon 1.5% and Pyriproxifen 0.063%). We measured the effect on *Triatoma palidipennis*, the scorpion *Centruroides limpidus* and larvae in houses in a rural community of 84 houses from June 2007 to December 2008. Two localities were selected as controls: one with paint without insecticides and the other with nothing. We evaluated the house infestations with 2 biological susceptibility tests on painted walls. After 18 mo of follow up, the houses painted with paint with insecticides remained uninfested and the community expressed its appreciation for not having any scorpion bites, while the control houses remained infested and had no change in their infestation levels. The effect of the infestation was statistically significant when analyzed with ANOVA and the Student's t test.

48 **Prevention and control of dengue through community participation**

Flor M. Herrera, flormhq@gmail.com, Maria Martinez, Elsa Albornoz, Luis Caguaripano, Wild Ladera, Auristela Figueroa, Isdelys Rodríguez, Nancy Moreno, Milena Mazzarri, Irma Agrela and Elina Rojas

The design of a good strategy to control and prevent dengue must include community participation. We accomplished this objective through communication strategies and social movement and by evaluating community members' knowledge, attitudes, and practices related to dengue. The methodology employed was as follows: selection of 2 communities from Aragua State: Sector 4, Caña de Azúcar, Municipio Mario Briceño Iragorry (MBI) and Parcela 28, Santa Inés, Municipio Francisco Linares Alcántara (FLA). Then, the establishment of a social network among different institutions related to the communities (community councils, community leaders, educational Institutions, universities, Alcaldías, Juntas