Six different nutritional and physiological conditions of *Aedes aegypti* were screened on deltamethrin and cypermethrin using an excito-repellency test system. These were conducted on unmate, sugar-fed, early blood-fed, late blood-fed, parous, and nulliparous female mosquitoes. Preliminary results demonstrated that rates of escape from contact, regardless of chemical compounds, were pronounced in parous mosquitoes, followed by unmate and nulliparous as compared to the other nutritional states ($P<0.05$). Interestingly, significantly high number of parous females escaped from the control chamber as compared to the others ($P<0.05$). This study cautions against the use of parous females as "the standard" for testing behavioral responses of mosquitoes to insecticides. Apart from parous, nulliparous and unmate showed rapid escape responses across two compounds.

After the screening processes, behavioral responses of six *Ae. aegypti* test populations were tested against the standard field dose (0.02 g/m$^3$) of deltamethrin. All six test populations showed significant behavioral escape responses, whether they have been exposed to insecticides. Insecticide contact irritancy played a predominate role in overall female mosquito escape responses; whereas non-contact repellency was not observed at levels significantly different from paired non-contact control tests ($P \geq 0.05$). In conclusion, contact irritancy is a major behavioral response of *Ae. aegypti* when exposed directly to deltamethrin. Rapid flight from areas exposed to space sprays or surfaces treated with residual pyrethroids could have a significant impact on the effectiveness of adult mosquito control and disease transmission reduction measures.