D-40 Insecticide resistance in *Culex tritaeniorhynchus* Giles, the major vector of Japanese encephalitis

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Insecticide resistance and the underlying resistance mechanisms of *Culex tritaeniorhynchus*, the major vector of Japanese Encephalitis (JE) in Sri Lanka, were investigated in 3 areas of Sri Lanka: Anuradhapura, Kandy and Welisara/ Ragama. Mosquitoes were collected using CDC light traps hung in piggeries. Adult mosquitoes were exposed to different dosages of insecticides according to the standard WHO procedure. High levels of resistance were observed for all 3 major insecticide groups in all the populations. This might be a result of the heavy exposure of *Cx tritaeniorhynchus*, which is a paddy field breeder, to agricultural and mosquito controlling insecticides.

Prevalence of the elevated carboxylesterases, the major insecticide resistance mechanism in *Culex* mosquitoes, was investigated in Anuradhapura *Cx tritaeniorhynchus* population using native polyacrylamide gel electrophoresis. When the gels were stained for esterase activity one á band and one ß band were elevated in almost all the individuals. Both bands were completely inhibited by paraoxon showing their involvement in organophosphate resistance. The á band was more reactive with propoxur (a carbamate). Pyrethroid permethrin did not interact with any of the bands showing the lack of contribution of this mechanism for the pyrethroid resistance shown by the mosquitoes. These á and ß bands cross-reacted respectively with the antisera raised against previously characterized Está2 and Estß2 carboxylesterases of *Cx quinquefasciatus*. The observed insecticide interaction and immunological data suggest a high degree of functional and epitope homology among the elevated esterase of *Culex* species.

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