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Determination of variant and Insecticide resistance status in *Anopheles stephensi* Liston in Mannar: a threat for prevention of reintroduction of malaria into Sri Lanka

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Anopheles stephensi, the urban malaria vector in India, has been recorded from Mannar Island, Sri Lanka in early 2017. For the elimination of this species from its newly invaded territory, it was crucial to determine the variant of the species and the susceptibility status of the population to the potential insecticides used in larviciding and Indoor Residual Spraying (IRS) in malaria vector control. With these objectives a field laboratory was set up in Pesalai, Mannar and a temporary colony of *Anopheles stephensi* was established. To determine the variant of the species present, the eggs (n=397) of the F1 generation were observed under microscope and the number of ridges present in egg float was recorded. Susceptibility of larvae and adult females to insecticides was tested using standard WHO test kits and procedures. The larvae (L3 & early L4 stages) collected from the breeding sites, mainly wells, were exposed to discriminating concentration of Temephos 0.25 mg/l. For this test, 150 larvae were used at a time in 4 test replicates and 2 controls. This was repeated three times from February to April 2017. Adult females (2-5 days old, unfed) obtained from rearing larvae in the laboratory were exposed to discriminating concentrations of several insecticides belonging to three classes. The tested insecticides were Cyfluthrin 0.15%, Deltamethrin 0.05%, Lamdacyhalothrin 0.05%, Etofenprox 0.5%, Propoxure 0.1%, and Malathion 4%. The test mortalities were adjusted for control mortalities using Abbots formula. The mode and the mean number of ridges in the egg float was 19 and 18.5 ± 1.3 (Mean ± SE). Percentage mortalities in larval susceptibility test for Temephos were 95%, 91% and 87% in three consecutive months. The adult *An. stephensi* showed mortalities 12%, 54%, 37%, 72%, 75% and 56% for Cyfluthrin 0.15%, Deltamethrin 0.05%, Lamdacyhalothrin 0.05%, Etofenprox 0.5%, Propoxure 0.1%, and Malathion, 4% respectively.*An. stephensi* population present in Mannar was identified as Type form based on the number of ridges. Larvae showed possible resistance to Temephos and the adult females were resistant to all the insecticides tested. The findings indicate that the control of *An. stephensi* population in Mannar Island is a challenge due to its resistance to insecticides. The presence of Type form which is the variant with high vectorial capacity and occurring mostly in urban areas in other countries shows the high risk of reintroduction of malaria into the country.

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