OP 8

Larvicidal response of *Anopheles stephensi* against three selected insecticides: A study from Jaffna, Sri Lanka

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Background: *Anopheles stephensi* is a newly invaded mosquito species in Sri Lanka, which has a high vectorial potential for malaria transmission. First reported from the coastal area of Mannar District, now, this species is being reported from several districts in the Northern and Eastern Provinces, including the Jaffna District.
Objective: To evaluate the efficacy of using selected insecticides for the control of *An. stephensi* larvae.
Method: A colony of *An. stephensi* was established from blood fed adult females caught from cattle baited net trap collections from Columbuthurai, Kurunagar, and Navanthurai areas in Jaffna and were maintained under standard rearing conditions (28 ± 2 °C; 60 ± 5% humidity). Batches of 100 third instar larvae were exposed to a concentration range from 0.04-400 ppm of temephos, novaluron and pyriproxyfen, separately. A control test was also performed without introducing any insecticides. The mortality rates of *An. stephensi* larvae exposed to different concentrations of larvicides were recorded at 1, 24 and 48 hour intervals. The experiment was replicated five times. Data were analysed using the General Linear Model (GLM) and Probit analysis.
Results: Mortality rates of *An. stephensi* varied significantly for different concentrations and larvicides ($p<0.05$). The mortality rate was highest (100%) for temephos, in concentrations of 100 ppm and above, while the mortality was lowest for pyriproxyfen (10.3% even at 400 ppm), within a 1 hour exposure period. The 100% mortality of *An. stephensi* larvae was observed from both temephos and novaluron even at 0.04 ppm concentration after a 24 hour exposure period. The highest mortality (59%) against pyriproxyfen was observed at 400 ppm after 48 hours of exposure, which is a slow response.
Conclusion: Both temephos and navaluron reported 100% mortality rates in third instar *An. stephensi* larvae at 1 hour and 24-hour exposure periods. Based on the findings, temephos and novaluron can be recommended as effective larvicides for chemical based control of *An. stephensi* in Jaffna.

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