

Control and prevention of dengue (*Aedes aegypti*) and malarial (*Anopheles stephensi*) vectors

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Abstract

Mosquitoes act as life threatening disease vectors. Due to non-availability of vaccine and treatment for most of these diseases, the only solution is to control the mosquitoes. The continuous application of synthetic insecticides causes development of resistance (in vector species), biological magnification (of toxic substances through the food chain) and adverse effects (on environmental quality and non-target organisms including human health). So, under the Integrated Mosquito Management (IMM), emphasis is given on the application of alternative strategies in mosquito control such as use of selective insecticides, plant extracts and Bti. During the current study, plant samples were collected from Faisalabad for oil and aqueous extraction. Mosquito larvae were collected from different habitats such as industrial, non-industrial area, sewage, pond, fields and land water and brought to Government College University, Faisalabad for rearing and identification. After identification, *Aedes* mosquitoes were reared and treated with different plant extracts, growth regulators and Bti. Six concentrations of each treatment were applied against 2nd and 3rd instars larvae. The data was collected to check knock down affect after 2, 4, 8, 16, 32, 64 and 128 hours respectively. The data was analyzed through ANOVA to find significant factors (plant extracts, synthetic insecticides and Bti) contributing for mortality. After screening experiments, different significant oil and water extracts, insecticides and Bti were tested in combination to test their efficacy against *Aedes* larvae. Again mortality data was collected and subjected to probit analysis to calculate LC₅₀. In the mixing trials, the highest (100%) mortality was observed with those solution having insecticides and Bti. The least value of LC₅₀ (1.3-40 ppm) and LT₅₀ (0.35-0.83hrs) was observed with solution of ether extracts, Bti and insecticides for *Aedes* larvae. We need to adopt advanced techniques for dengue vector control such as application of significant plant extracts, significant insecticides and Bti for excellent and sustainable control. By adopting these techniques we should able to manage the populations of *Aedes* in the environment.

Biography:

Imran Ahmed working as Research Assistant in the Higher Education Commission Project for three years at Government College University Faisalabad Pakistan. His expertise is in evaluation and passion in improving the health and wellbeing. His open and contextual evaluation model based on responsive constructivists creates new path ways for improving health care. He has built this model after years of experience in research, evaluation, teaching and administration both in hospital and education institutions.

Speaker Publications:

1. "Plant extracts along with selective chemicals and bacillus thuringiensis israelensis: a novel approach to tackle the problem of insecticidal resistance in mosquitoes"; Pak J Agri Sci/ Vol 56, 2019, 905-911.
2. "Integrated control and prevention of malaria (*Anopheles stephensi*) and dengue (*Aedes aegypti*) vectors with plant extracts through ether, insecticides and bti"; International Journal of Biosciences/ Vol 14, 2019, 388-395.

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