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Integrated strategies for the control and prevention of dengue virus

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In Southeast Asia, the congenital hemoglobin disorder, thalassemia is highly prevalent. Dengue is a very common tropical disease in tropical Southeast Asia. Hence, it is interesting to mention for the dengue problem in stem cell therapy for thalassemia patients. In Pakistan noted that dengue was an important problem for the patient receiving stem cell therapy. This might be a case of underreporting or there is actually no case due to the good infection control in the endemic area. Finally, it should be noted that it is verified that dengue can also infect a precursor cell that might be further used for stem cell therapy. In the tropical world, dengue is an actual important problem to be aware of hemotherapy by stem cell treatment for thalassemia. 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 the 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), the emphasis is given on the application of alternative strategies in mosquito control such as the 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 to knockdown effect after 2, 4, 8, 16, 32, 64 and 128 hours respectively. The data were 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 were 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 (1.3-40ppm) and LT50 (0.35-0.83hrs) was observed with a solution of ether extracts, *Bti* and insecticides for *Aedes* larvae. We need to adopt advanced techniques for dengue vector control such as the 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.

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