

Toxicity assessment, growth disrupting and neuro behavioral effects of red seaweeds against dengue vector mosquito, *Aedes aegypti* (L)

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Application of synthetic pesticides over decades to control insect pest and disease vector resulted in negative environments and hazardous health impact. To elevate this problem, the current approach is to utilize the marine-derived natural product. As marine plants occupy two-thirds of the earth's surface and are an untapped reservoir of the novel compounds. Therefore, in the present study, a particular attempt has been made to assess the toxicological effects of seaweeds against the dengue vector mosquito, *Aedes aegypti* (L). Dengue is the most prevalent vector-borne viral disease and has affected nearly half of the world population. Its adult is also the primary carrier of Chikungunya and Zika virus. In this experimental work, four species of red seaweeds [*L. obtusa*, *G. folifera*, *J. rubens*, *A. taxiformis*] were collected from the Karachi coast and soxhlet extracted with varying polarity. The efficiency of red seaweeds extracts against *Ae. aegypti* [larval, pupal and adult] stages were determined by using dose-response bioassay method. *Ae. aegypti* colony was established under the insectary condition. A separate investigation of the toxicity and IGR effects were carried out. Based on the LC₅₀ value, *J. rubens* hexane extracts exhibited the potent toxic effect [LC₅₀=32ppm] after 24h of treatment. The high knockdown effects with abnormal behavioral response were noted in the hexane extracts within 1-6h of treatment and photographed by canon camera. Moreover, in the median and higher concentrations of the chloroform and methanol extracts, morphological abnormalities and growth inhibiting (IGR) effects were determined resulted in the formation of immature such as a larvae-pupae form. The chitin synthetic inhibiting effect such as the inhibition of *Ae. aegypti* adult emergence was clearly seen. It shows red seaweeds, occupying the Arabian Sea, having several aspects of effecting *Ae. aegypti* survival that can be utilized as green pesticides.

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