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Red seaweeds effectiveness against dengue vector mosquito, *Aedes aegypti* (L) and its chemical constituents analysis

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Marine flora produce a rich source of secondary metabolites that are biologically active against predators, pests and pathogens. Wide range of chemically interesting and novel compounds has been explored from the red seaweeds. The Pakistan coast at the northern boundary of Arabian Sea is enriched with a variety of red seaweeds. Although, the exploration of these bioactive compounds has been done to the limited extent. 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. Application of synthetic pesticides on the 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. 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 hexane, chloroform and methanol. The efficiency of red seaweeds extracts against *A. aegypti* [larval, pupal and adult] stages were determined by using dose-response bioassay method. The comparative study showed that the hexane extracts possess toxic larvicidal effects against the *A. aegypti* 4th instar larvae. Based on the LC_{50} value, *J. ruben* hexane extracts exhibited the potent toxic effect [LC_{50}=32 ppm] after 24 h of treatment. Study proven, constituents having a toxic effect against mosquito larvae are lipophilic and halogenated compounds. The active fraction was subjected to chromatography techniques to determine the bioactive compounds involved in the larvicidal activity so that it could be projected as a weapon for the control of mosquito population.

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