

Abstract:

Botanical insecticides have been long used as environmentally friendly alternatives to synthetic chemicals for pest management. They are renewable, degradable in the environment and relatively safe to natural enemies, non-target organisms and human beings. Plants produce a range of chemical substances to prevent attack by herbivores. Such chemicals are secondary plant metabolites and include alkaloids, flavonoid and terpenoids. The physic nut tree *Jatropha curcas* (Euphorbiaceae), widely distributed in tropical and subtropical areas, is well known for its toxicity attributed to several phytochemicals including saponins, lectin (curcin), phytates and protease inhibitors. The most biologically active compounds are phorbol esters, diterpenoid fractions present in the seed oil. The different extracts of *J. curcas* exhibit various pesticidal effects (antifeedant, repellency or oviposition deterrence). Extracts that were studied and showed biological activity against insect pests in this regard were mainly leaf extracts, seed oil and particularly the phorbol esters fractions. In this study, we tested the different insecticidal aspects of *J. curcas* on different insect orders: Lepidoptera, Hemiptera, Coleoptera and Diptera. The antifeedant effect was tested on the cotton bollworm *Helicoverpa armigera* (Lepidoptera: Noctuidae) at in vitro and greenhouse conditions on the 2nd and the 3rd instar larvae. The reproduction deterrence effect of the seed oil was tested on the black bean aphid *Aphis fabae* (Hemiptera: Aphididae) on broad bean plants under controlled conditions. The insecticidal effect of *J. curcas* on belowground insects was also tested on the cabbage root fly *Delia radicum* (Diptera: Anthomyiidae) and the western corn rootworm, *Diabrotica virgifera* (Coleoptera: Chrysomelidae). The results of this study proved the insecticidal properties of this plant and its promising use in plant protection.