A Novel Study of the Bio-insecticidal Properties of Annona reticulata L.

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Chemical Insecticides have done immense damage to the core of environmental systems. The alternatives present in the market are unaffordable or inaccessible to the marginal farmer, In search of an alternative, one peculiar feature of Annona reticulata was noticed -- its surprising resistance to pests. Annona reticulata is also widely cultivated across the world. The crude aqueous extract was prepared from the leaves and used for in-vitro mortality Bioassays against H.armigera, C.partellus, M.aphidae, and S.frugiperda. Results of the assays indicate significant insecticidal properties with 90% + mortality at 10% concentration. The extract was also applied to plants such as Murraya koenigii, Momordica charantia, and Solanum lycopersicum. It proved extremely effective as it reduced infestations by 85%. Several tests such as Stability tests and phytochemical analysis tests have been conducted These tests the quantified shelf life of the extract and secondary metabolites present. Antioxidant tests done through the DPPH scavenging method indicated a scavenging percentage of 93.63% at 50ul. The driving force behind these properties is believed to be a combination of compounds like Germacrene D, Caryophyllene Oxide, and Phytol which was identified by GCMS analysis, and a secondary class of compounds – Acetogenins. In combination, they cause apoptosis as well as act as repellants. They also inhibit insect development and behavior. On the economical side, due to its low manufacturing cost of 25 rupees/liter ($0.33/l), it reduces the expenditure of the farmer on Insecticides by 80% while providing them with an additional source of income by selling surplus extracts or fruits. Therefore, it was concluded that the extract of A.reticulata is a cost-effective Bio-Insecticide.

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