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SCREENING OF PESTICIDAL PROPERTIES OF *LANTANA CAMARA* AND *CALOTROPIS PROCERA* EXTRACT AND ITS APPLICATION AGAINST *SPODOPTERA LITURA*(TOBACCO CUT-WORM)

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Abstract

In recent years botanical extracts that appears to have a vital role in the Development of low cost pesticides together with for Agricultural and forestry crop yield enhancement. Further more for the safety of Environment and public health. The Detrimental Environmental implications of the Synthetic bio-pesticides have forced to search for some substitute methods. This lead to enhanced development of compounds based on the types of naturally occurring toxins of biological origin having a lot of biological activities. This includes plant extracts, which are now well known because they are environmentally harmless and host specific. The different concentrations of plant extracts with different solvents (polar, semi-polar and non-polar) were tested for mortality properties against Spodoptera liturathird instar larvae. The prepared extract of aerial parts of plant *Lantana camara* and *Calotropis procera* were tested and the most effective concentrations have been worked out *L. camara* and *C. procera* weed plant having different medicinal properties. (MS excel & poloplus) software is applied. The LC_{50} and LC_{90} estimated using Hexane, Aqueous, Chloroform, Ethyl acetate, Ethanol extracts of C. proceraand *L. camara* were 0.24, 0.33, 0.20, 018, 0.15 and 1.97, 3.09, 0.90, 1.77, 0.88 respectively with fiducial limit of 0.16 to 2.44, 0.25 to 10.65, 0.17 to 2.67, 0.15 to 2.00, 0.10 to 5.97 and 0.16 to 2.44, 0.20 to 6.44, 0.17 to 1.61, 0.09 to 6.33, 0.06 to 11.12. The LC_{50} and LC_{90} limits estimated with Hexane, Aqueous, Chloroform, Ethyl acetate extract *L. camara* wire 0.19, 0.26, 0.16, 0.14, 0.13 and 1.35, 3.09, 0.99, 0.79, 0.59. Respectively with fiducial limits of 2.44 to 16.31, 6.44 to 4.98, 1.61 to 9.58, 6.33 to 4.56, 11.12 to 2.33 and 4.08 to 6.17, 10.65 to 5.49, 2.07 to 11.13, 2.00 to 18.96, 5.97 to 6.42 respectively.

Keywords: *Calotropis procera*, *Lantana camara*, *Spodoptera litura*, mortality, LC_{50}, LC_{90}.

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Introduction

Wide spread use of chemical pesticides in agricultural and public protection has led to a magnificent scale of Environmental exposure. The natural and monetary commitments of pollinator honey bees to farming creation have been compromised by the wrong and extreme utilization of pesticides (Tschoeke *et al*., 2019). Normal utilization of pesticides in present day horticulture and general well being activity frameworks has resulted in genuine environmental impact (Minelli and Rebeiro, 1996; Waliszewiski *et al*., 1999) as of late, the interest in the utilization of plant items has expanded, as a result of cost adequacy, and low mammalian poisonousness (Subramaniyam and Rosli, 2000). In these specific circumstances, screening of common items has gotten in consideration of analysis around the globe (Kebede *et al*., 2010). Farmers and Researchers frequently Guarantee truthful utilization of plant materials in insect pests. Control including debris (Ajayi *et al*., 1987) vegetables oils (Sahayaraj, 2008) and powders of plant parts (Lajide *et al*., 1998). Plants with insecticidal properties are giving options in contrast to as of now utilized manufactured substance pesticides as a result of their richness of bio-active synthetics (Quin *et al*., 2010). These Bioactive synthetic compounds go about as fumigants (Choi *et al*., 2006), contact inject sprays (Tang *et al*., 2007), anti-agents (Islam *et al*., 2009) and Anti-feedarts (Gonzalez, Coloma *et al*., 2006) and may influence some natural boundaries, for example, development rate (Nathan *et al*., 2008), life length and proliferation (Isikber *et al*., 2006). Aerial parts of *L. camara* have likewise been explored for their insecticidal, anti-ovipositional and antifeedant activities against *Allso-bruchus chinensis*, petrol ether and ethanol based extract of the plant showed 10-43% mortality of *A. chinensis* (Saxena *et al*., 1992). Chloroform based extracts of *L. camara* has been discovered to be altogether powerful against termite laborers (Kumar and Verma, 2006) and fluid concentrates have been deadly for fourth instars larvae of Spodoptera lituraunder lab conditions. *C. procera* has various alkaloids, flavanoids, terpenes, terpenoids, furthermore, other inorganic components (Khanzaada, 2008). There are various reports asserting the insecticidal properties of plant concentrate and fundamental oils of *C. procera* (Begum and Sharma, 2013). Pesticidal compounds discovered in C. procerahave been accounted for to be powerful against insect pest (Ingle *et al*., 2017), fungi, microorganisms and nematodes (Chin *et al*.,

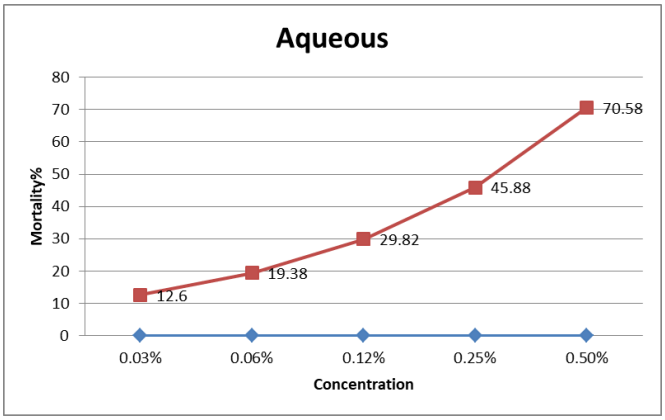
2017). Plants inferred items have been utilized to repulse or killing mosquitoes and other home grown insect pests throughout of the word (Pavella, 2016). *Lantana camara* do not have antifeedant activity at all concentrations (Oraon Priti Kumari and Thakur Anand Kumar, 2022).

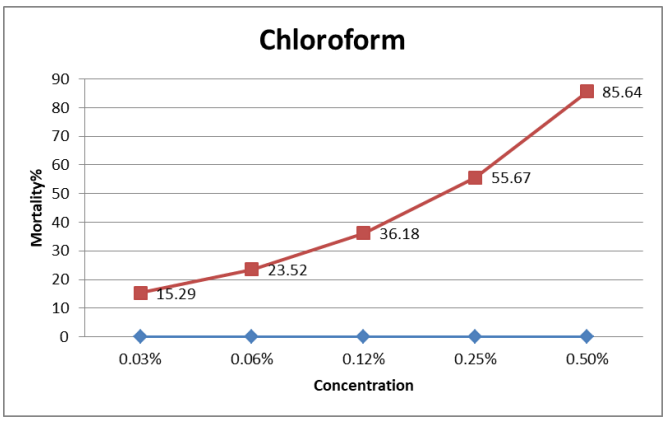
Material & Methods:

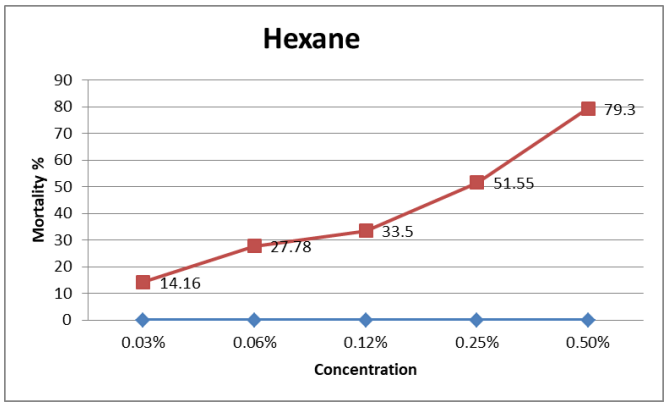
The Aerial parts of the *Lantana camara* and Clotropis procera were collected randomly from the fields of Chaudhary Charan Singh University, Meerut, Uttar Pradesh, India. The plant samples collected were washed, dried and then grounded to powder form. The aerial parts were extracted thrice with 300ml ethanol and concentrated by Rotary vacuum evaporator (Buchi-Rotavopour R-200/R-205) at 70ºc and evaporated to dried crude extract and stored at 4ºC in an air tight bottle. Other solvents i.e., Hexane, Aqueous, Chloroform, Ethyl acetate, Ethanol having polar, non-polar and semi-polar activities were also utilized for mortality study.

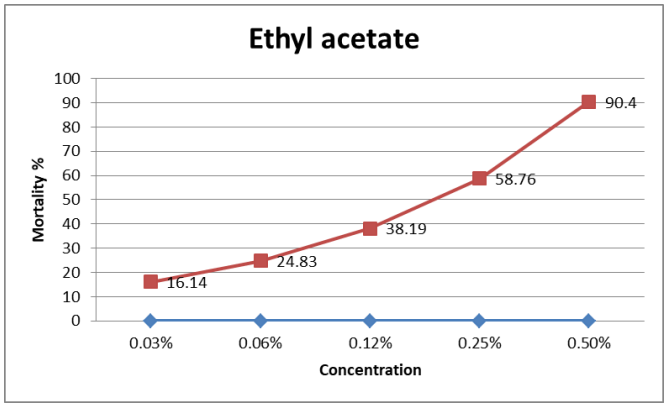
Result & Discussion:

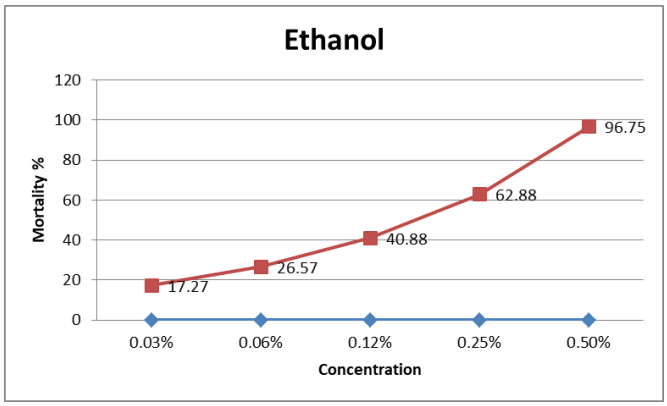
During this study work the mortality percentage was observed at all respective doses against *Spodoptera litura* (Third instar larvae) after that we observed significant mortality action comparison against control. The result shows that *C. procera* showed maximum mortality rate of *Spodoptera litura* by ethanol extract (96.75%) followed by Ethyl acetate, Hexane, Chloroform and Aqueous solution. Likewise, in case of *Lantana camara*, the maximum mortality rate was observed in Ethanol solution (96.75%), followed by ethyl acetate, hexane, chloroform and aqueous solution at different concentrations as depicted in Tables.











Conclusion:

Laboratory and field trial evaluations of plants Extracts revealed that the chloroform fraction of C. proceraand *L. camara* in combination showed synergistically enhanced activity at very low dosed (0.03% and 0.50%) and has promising potential as insecticidal activities for the management of Spodoptera litura. The combination of C. proceraand *L. camara* can be applied for integrated pest management (IPM).

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