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Visual abstract

Our insecticidal results revealed that crude extract obtained from the leaves kill 7 insects followed by the ethyl acetate fraction which kill 6 insects. While lowest value was recorded for the aqueous fraction which kill no insect. In case of samples obtained from flowers of our research plant chloroform fraction was recorded to show maximum motility rate, killing of 5 insects followed by crude extract which kills 4 insects. n-butanol and water fractions were found non-reactive as they kill no insect. The crude extracts and its derived fractions obtained from leaves and flowers of M. cerviana were subjected to antifungal activities. Results showed that extract/fractions obtained from leaves were found to be more active as compared to extract/fractions obtained from flowers. The leaves crude extract exhibited 19.5 mm of inhibition against Alternaria solani, 22 mm and 20 mm of inhibition against Fusarium solani and Fusarium oxysporum respectively.Chloroform and ethyl acetate fractions showed almost equal zones of inhibition against the three tested fungi. The lowest inhibition zone of 5 mm was given by n-butanol fraction against Fusarium oxysporum. Out of samples obtained from flowers the chloroform fraction gives a maximum zones of inhibition of 19 mm, 18.5 mm and 19.5 mm against Alternaria solani, Fusarium solani and Fusarium oxysporum respectively followed by crude extract which showed 17mm, 18.5 mm and 19 mm of inhibitions against Alternaria solani, Fusarium solani and Fusarium oxysporum respectively. The lowest antifungal activities was exhibited by n-hexane fraction. Surprisingly, no antifungal activity was shown by ethyl acetate, n-butanol and water fractions. Findings of the current study suggest that over all M.cervania exhibited good toxicity at macro and micro levels. The leaves of our research plant seem to be more potentially active as compare to flowers.

Key words: Medicinal plants, Biological Screening, Drug sighting,Mollugo cerviana L

Discussion

Plant derived fractions have been used from the prehistoric time as medicine against many diseases and also against several pathogens like fungi and insects to prevent diseases before their onset (Dixon, 2000). According to the world health organization more than 80% of world population are involved in the uses of different plants for many reasons. There are billions of plants across the world in which only 50,000 has known for their potential benefit and yet others are waiting to be discovered (Duke et al., 2010). Besides these demands for medicinal plants usage has increased day by day due to their less or no side effects and extracts from the plant does not develop any resistant strains. Further uses of plants as medicine has low cost, affordable by all. A single plant can be used to extract 100 of medicines. According to the scientist of food and nutrition sciences, plants are the source of wide range of pharmaceutical products and contains different agents that are used for different disorders like cancer, hepatitis, diabetics, CVD etc. (Gangula et al., 2013). Current study focused to evaluate the M. cervaniaextracts from the flower and leaves as antifungal and insecticidal. Results showed that the leaves crude extract exhibited 19.5 mm of inhibition against Alternaria solani, 22 mm and 20 mm of inhibition against Fusarium solani and Fusarium oxysporum respectively. Chloroform and ethyl acetate fractions showed almost equal zones of inhibition against the three tested fungi. The lowest inhibition zone of 5 mm was given by n-butanol fraction against Fusarium oxysporum. Out of samples obtained from flowers the chloroform fraction gives a maximum zone of inhibition of 19 mm, 18.5 mm and 19.5 mm against Alternaria solani, Fusarium solani and Fusarium oxysporum respectively followed by crude extract which showed 17mm, 18.5 mm and 19 mm of inhibitions against Alternaria solani, Fusarium solani and Fusarium oxysporum respectively. The lowest antifugal activities was exhibited by n-hexane fraction.Surprisingly, no antifungal activity was shown by ethyl acetate, n-butanol and water fraction.

Methods and Materials

Current study focuses to evaluate the fungicidal and insecticidal activity of the Mollugo cerviana(L).Our research plant was collected from district Karak. After identification of plant it was dried in shade and grinded into fine powder with the help of grinder. After then powder were socking in 70% methanol for seven days. After filtration via Nylon cloth the filtrate was subjected to rotary evaporator for getting crude extract. Then crude extract was fractionized in to n-hexane, chloroform, ethyl acetate, n-butanol and aqueous fractions. The crude extract and its derived fractions were subjected to antifungal and insecticidal activities under standard procedures. For insecticidal activities insect Fermicidie (black house ant) was used and fungi Alternaria solani, Fusarium solani and Fusarium oxysporum were used to check fungicidal activities of our samples as per established protocols.Data obtained in the experimental procedure was presented as mean and standard error. Significance of the data was evaluated by using ANOVA.

A. solani	19.5 ± 0.57	11± 0.35	17±0.81	16.5 ±	6± 0.80	6± 0.71	24
F. solani	22 ± 0.63	13± 0.53	18.5 ± 0.69	19 ±0.75	6 ±82	6.5 ±81	26
F. oxysporum	20 ± 0.53	9 ±0.61	15 ±0.82	15.5 ±0.67	5± 0.91	6± 0.65	21

Figure 4.2 Anti-fungal activity of the crude extract leaves of *Mollugo cerviana* (L) 50µg/L

Results

Anti-fungal activity of Mollugo cerviana(L)

Extract from Flower: Out of samples obtained from flowers the chloroform fraction gives a maximum zone of inhibition of 19.5 mm, 18.5 mm and 19.5 mm against Fusarium oxysporum, Fusarium solaniand Alternaria solani respectively, followed by crude extract which showed 17mm, 18.5 mm and 19 mm of inhibitions against Alternaria solani, Fusarium solani and Fusarium oxysporum respectively. The lowest antifungal activity was exhibited by n-hexane fraction. while, no antifungal activity was shown by ethyl acetate, n-butanol and water fractions.

Our insecticidal results revealed that crude extract obtained from the leaves kill 7 insects followed by the ethyl acetate fraction which kill 6 insects. While lowest value was recorded for the aqueous fraction which kill no insect. In case of samples obtained from flowers of our research plant chloroform fraction was recorded to show maximum motility rate, killing of 5 insects followed by crude extract which kills 4 insects. n-butanol and water fractions were found non-reactive as they kill no insect.

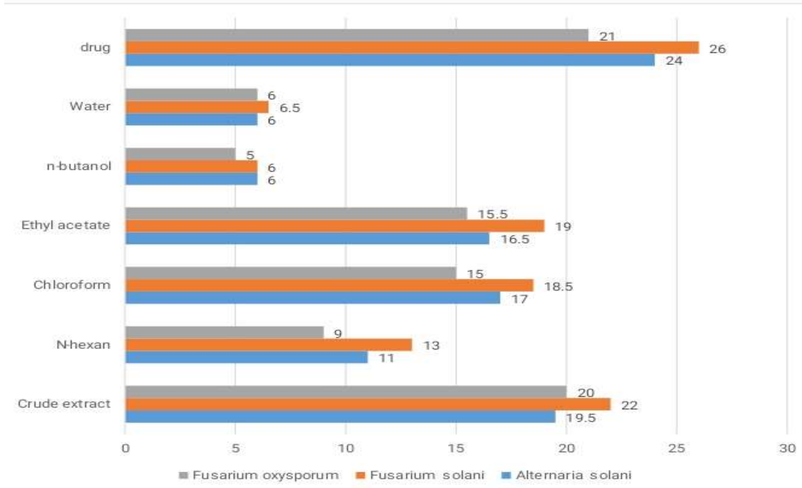

Figure 4.2: Anti-fungal activity of the crude extract leaves of *Mollugo cerviana* (L) 50µg/L

Conclusions

Fractions obtained from leaves were found to be more active against the tested pathogens (fungi and insects) as compared to extract/fractions obtained from flowers. Extract from the leaves was more active against the Fusarium solani.Chloroform from both fractions show excellent result against the three tested fungi. Besides this ethyl acetate, n-butanol and water fractions exhibit no anti-fungal activity. In case of insects,
ethyl acetate and crude extract from leaves were more active against the tested insects. While chloroform from the flower shows maximum mortality rate as compared to any other fraction. Though findings of the current study suggest that use of the M, cervania can be proved beneficial but one think should keep in mind that activities that are performed in
laboratory (in-vitro) does not necessary to show perfect activity in the natural environment so it is to be noted that potential of this plants should be tested in natural setting (in-vivo or natural ecosystem). besides this all those plants that are discovered
and has been used as anti against many pathogens has always some flaws so new targets and new plants derivate should be encouraged to mine out for better future.

- The active plant extract/fractions are recommended for in vivo studies.
- The active plant extract/fractions are recommended for isolation of natural compounds.

gure 3.1: ***M. cervania*** collected from the Karak

figure 4: *M. cervania*

References

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