Comparative study of effect of *Lantana camara* extract of different parts on seed germination of *Parthenium hysterophorus* L.

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**SUMMARY**

Extracts of leaf, stem, flower and fruit of *Lantana camara* inhibited the seed germination of *Parthenium hysterophorus* clearly indicated that the allelochemicals present in the extracts adversely affected the seed germination. Maximum seed germination was observed in control. Leaf extract was found to exhibit maximum allelopathy followed by stem, flower and fruit extracts.

**Key words**: *Lantana camara, Parthenium hysterophorus*, Allelochemical, Seed germination

Weeds pour serious problem to farmers throughout the world reducing yield and quality of crops. *Parthenium hysterophorus* L also known as American weed or carrot grass. *Parthenium hysterophorus* (Asteraceae), a native of West Indies and Central and North America. It is an exotic weed and was introduced in India along with food grain under PL 480 scheme. The weed was reported for the first time in India 1956 (Rao, 1956).

*Parthenium hysterophorus* is a problematic weed to human and floral diversity. It is commonly spread road sides, waste lands, marshy lands and fertile lands. A plant can produce more than 20,000 seeds which require bare soil to germinate without any dormancy.

*Parthenium* is a allergic plant and its pollen can cause allergic reactions such as respiratory problems, weight loss, swelling, contact dermatitis etc. *Parthenium* produce several allelochemicals such as alkaloids, parthenin, kaempferol, P-coumaric acid, caffic acid (Towers et al., 1977). *Parthenium* inhibits the seed germination and growth of other plants.

*Lantana camara* is one of the ten worst weeds of the world and is serious weed in 14 crops in 47 countries. However, allelopathic effects on crops have been studied least (Narwal, 1994). Various allelochemicals present in different parts of *Lantana camara* and has allelopathic effect against agronomic crops and it is one most toxic weeds in the world (Holm and Herberger, 1969). The leaf extract of *Lantana camara* produced inhibitory effect on growth of Parthenium (Ravindra et al., 2008). Allelopathic effect induced by *Lantana camara* inhibits growth of other vegetation as well as seed germination.

Because *Parthenium* is a toxic weed has become a serious threat to plant biodiversity and environmental safety and its control at the first stage (seed germination) is very essential. Allelochemicals of *Lantana camara* were used to inhibit seed germination of *Parthenium* which is a ecofriendly method.

Present paper deals the effect of various concentrations of stem, leaf, flower and fruit extract of *Lantana camara* on germination of seeds of *Parthenium*.

**MATERIALS AND METHODS**

Fresh material of *Lantana camara* was collected from Chitrakoot, Satna (M.P.). 100 g each leaf, stem, flower and fruit chopped in small pieces and crushed in the pastel mortar. 100g each of leaf, stem, flower and fruit was soaked in 150 ml double distilled water for 24 hrs. The final volume of liquid extracted was 200 ml for all the specimens.

The extract of each specimen was filtered with ordinary filter paper. A total of 98 ml of double distilled water was added to 2 ml of extract to make 2% solution. Similarly all the concentrations (2,5,10,15,20,25,30,40 and 50%) were prepared by adding appropriate amount of double distilled water.

50 seeds were spread in Petri-dishes containing Whatman’s filter paper, moistened with different concentrations of leaf, stem, flower and fruit extracts of *Lantana camara*.

Observation were recorded at 3rd, 5th and 8th day.

**RESULTS AND DISCUSSION**

The results obtained from the present investigation are presented in Table 1 and 2.

Extracts of leaf, stem, flower and fruit of *Lantana camara* adversely affected the seed germination of...
Observation recorded in Table 1 indicates that maximum seed germination was in control. With the increase in concentration of Lantana extracts the percentage of seed germination was decreased. However, it was found that with the increase of time period 3, 5 and 8 days, the percentage of germination increased .

Leaf extract of Lantana inhibited maximum seed germination followed by stem, flower and fruit. Allelochemicals were present in increasing order leaf > stem > flower > fruit.

However, with increase in concentration, percentage of seed germination was decreased but by increasing time period percentage of seed germination increased .

Responsible allelochemicals of Lantana camara for this inhibitory effect are triterpinoids, lantadene A, lantadene B, camaric acid, camaraside, camaracinic acid, flavonoids, ursolic acid, palmitic acid etc. but triterpenoids compounds was more toxic to other allelochemicals.

**Acknowledgement:**

Authors would like to thank Prof. G. Singh, Vice-Chancellor of M.G.C.G.V Chitrakoot, Satna (M.P.) for providing the facilities for this study.

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