

Project work on

**“Comparative studies on the inhibitory effects of different plant species on germination and early growth of Parthenium”**

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## **ABSTRACT**

*P. hysterophorus* is an obnoxious and aggressively invasive weed of global significance and is a threat to environment and biodiversity. Its invasiveness and potential for spread has caused reduction in the economically important species and forest plants. In grass lands its invasiveness has reduced the grass by 90%. *P. hysterophorus* causes asthma, dermatitis, eczema and hay fever in humans. It causes dermatitis in animals whose milk become bitter and poisonous after consuming the weed. Management of this weed imparts huge economic burden on the countries where it has aggressively invaded - over \$22 million a year in Queensland alone due to its impact on the pastoral industry. Moreover, allelopathic effect of *P. hysterophorus* on other spp. makes it difficult for the weed management strategies. As no single method of control has been successful, an integrated approach is suggested.

Based on the previous work in our dept and the personal information from UAS, GKVK, we selected *Nerium Oleander* (2 varieties), *Thevetia peruviana* and *Tegetes patula* for their effect on Parthenium in laboratory conditions. Bioassay for germination of Parthenium using leaf and root extracts of the above said species of plants was conducted. Significant differences have been found in the germination percentage, root and shoot length with the various concentrations of the different extracts. The concentration of extracts for 50% inhibition has been analyzed. White flowered *Nerium* showed much higher inhibition than that of pink variety. HPLC and TLC analysis have been conducted in order to find the presence/absence and the difference in the concentrations (if present) of the various compounds present in above species. Pure chemicals purchased from Sigma Aldrich- Rutin, quercetin and coumaric acid, were used as standards. Significant difference in the concentration of rutin in *Nerium oleander* (pink and white) was observed which made us to test whether rutin causes inhibition.

Bioassay for germination of parthenium was conducted using rutin, quercetin and coumaric acid.