

## **Inhibitory Effect of Some Medicinal Plant Extracts on *Meloidogyne javanica* in Tomato**

### **Abstract**

Root-knot nematode (*Meloidogyne* spp.) is considered one of the most important diseases agents of tomato worldwide. The nematodes attack to more than 2000 plant species. The main objective of the research was to find effective extracts against *Meloidogyne javanica* nematodes. In this experiment seeds of *Ferula asa-foetida* L., flowers of *Matricaria recutita* L., leaves of *Hibiscus sabdariffa*, leaves of *Satureja hortensis* L. and stem with leaves of *Rosmarinus officinalis* was used for extraction. The percentage of mortality of second stage juveniles influenced by different concentration of methanol plant extracts (125, 250, 500, 1000 and 2000 ppm) in micro tube after 24, 48 and 72 hours and the percentage of unhatching of nematodes eggs influenced by different concentration of methanol extract (125, 250, 500, 1000 and 2000 ppm) and water plant extract (2000, 3000, 4500 and 7000 ppm) in 24-well plates after 14 days were evaluated by binocular. In these experiments distilled water was used as a control. These experiments were studied in a factorial completely randomized design respectively with four, three and three replicates. The extracts of *Ferula assa foetida* and *Satureja hortensis* which had better effects on nematodes eggs and juveniles, were selected for green house tests. In green house tests, each concentrations of extract of two medicinal plants were added in soil after planting a susceptible tomato seedling (CV: *Early urbana*) in four-six leaves stage, and after four days 2000 juveniles of *Meloidogyne javanica* were inoculated into each pot. After 2 month, the plants were carefully removed from each pot and the growth and disease parameters were determined. The green house tests were studied in a completely randomized design in four replicate. Data were analyzed by MSTATC and means were separated by Duncan's Range Test. The extract from seeds of *Ferula assa foetida* following 24 h of exposure with concentration of 500 ppm and the extract from leaves of *Satureja hortensis* following 24 h of exposure with concentration of 2000 ppm were found to be toxic to juveniles. Methanolic extract from leaves of *Satureja hortensis* with concentration of 2000 ppm and the water extract from seeds of *Ferula assa-foetida*, flowers of *Matricharia recutita* and leaves of *Satureja hortensis* with concentration of 7000 ppm after 14 days were found to be effective on unhatching the nematodes eggs invitro. The maximum range of enhancement of growth parameters were found in plants treated with concentrations of 250,500 and 1000 ppm of *Ferula assa-foetida* extract and 500 and 1000 ppm of *Satureja hortensis* extract. The minimum range of disease factor was found in plants treated with *Ferula assa-foetida* extract.

**Key words:** Root-knot Nematode, Medicinal Plant Extracts, Inhibitory Effect, Tomato, nematicidal



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