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STUDIES ON THE EFFECT OF BARE ROOT-DIP TREATMENT
WITH ANTIBIOTIC KT-199 ON *MELOIDOGYNE INCOGNITA*
INFESTING TOMATO¹

by

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Studies on the effect of antibiotics on plant parasitic nematodes are few (Estey and Panayi, 1972; Setty *et al.*, 1978). Reddy (1978) reported that antiamoebin applied as a soil drench or as a foliar spray to tomato plants did not affect their growth but significantly reduced the development and reproduction of *Meloidogyne incognita* (Kofoid *et* White) Chitw. Nanje Gowda (1983) found that the antibiotic KT-199, a semisynthetic peptide antihelminthic antibiotic produced in culture of *Streptomyces* sp., acted similarly. In the present study KT-199 was compared with the systemic nematicide phenamiphos in their effect on infestation of tomato seedlings with *M. incognita*.

Six week old tomato (cv. Pusa Ruby) seedlings grown in sterilized soil were washed free of adhering soil before dipping the roots for 1 hour in water solutions of KT-199 at concentrations of 125, 250, 500 or 1000 ppm. A water dip provided an untreated control. After dipping, the plants were shaken free of excess liquid and then planted singly in 15 cm diameter clay pots containing sterilized soil. Each pot was inoculated with 1000 larvae of *M. incognita* with four replications of each treatment. A non volatile nematicide phenamiphos (500 ppm) was also used as a positive control; inoculated untreated (control), uninoculated treated and uninoculated untreated (healthy) plants were also maintained for the purpose of

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Table I - Effect of root-dip treatment with the antibiotic KT-199 on the growth of tomato infested by *Meloidogyne incognita*.

Treatment	Concentration (ppm)	Shoot length (cm)	Shoot weight (g)	Root weight (g)
Antibiotic	125	71	30	13
	250	71	33	13
	500	75	37	13
	1000	76	33	12
Phenamiphos	500	75	35	13
Uninoculated treated control	500	75	38	12
Inoculated untreated control	—	75	39	16
Uninoculated untreated (healthy)	—	70	36	13
Mean	—	73	35	13
S. Em. \pm	—	6.1	3.9	1.4
C. D. Value at 1%	—	NS	NS	NS

Table II - Effect of root-dip treatment with the antibiotic KT-199 on development of *M. incognita* on tomato

Treatments	Concentration (ppm)	Number of galls / plant	Number of egg masses / plant	Number of eggs / eggmass
Antibiotic	125	126	79	511
	250	101	64	340
	500	92	50	365
	1000	72	39	333
Phenamiphos	500	116	77	488
Control	—	242	168	628
Mean	—	125	79	459
S. Em. \pm	—	4.5	3.5	23.8
C. D. Value at 1%	—	18.3	14.5	96.9

comparison. The plants were maintained in a glass house at 25-30°C for 45 days. Plant growth was assessed by recording shoot length (cm) and fresh weight of shoots and roots (g); number of galls, egg masses per plant and eggs per egg mass were also taken.

The antibiotic as well as the nematicide phenamiphos had no adverse effects on the growth of tomato plants (Table I). The increase in the concentration of the antibiotic from 125 to 1000 ppm had reduced the average number of galls per plant from 126 to 72 when compared with phenamiphos, 116 and to control, 242 (Table II). The maximum reduction of galls, egg mass production and eggs per mass were observed at concentration of 1000 ppm and differed significantly compared to other concentrations, including the phenamiphos treatment. Among the different concentrations, there were no significant differences between 250, 500 and 1000 ppm concentrations in reducing the number of eggs per egg mass. But 125 ppm concentration was found equally effective as compared to phenamiphos in reducing the number of galls, egg mass production and eggs per egg mass. In general, it is concluded that bare root-dip treatment with antibiotic KT-199 is effective in reducing the infection and suppressing the development and reproduction of *M. incognita* on tomato.

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