

Agri. Res. J. Kerala, 1977, 15 (2)

**STUDIES ON THE PRODUCTION OF ANTIBIOTIC IN CULTURE
BY A *STREPTOMYCES* SPECIES**

The studies on the soil microflora have resulted in understanding the potentialities of several microorganisms and their usefulness to man. One of the several benefits derived from these organisms is through the discovery of antibiotic substances.

A *streptomycetes* sp which showed antagonistic activity against various plant pathogenic bacteria and fungi was studied in detail (Susamma Philip and Sam Raj 1973, 1976). The crude antibiotic obtained in culture was diluted 1/100, 1/200, 1/300, 1/400, and 1/500 and used for sounding (1) Germination of fungal spores, (2) Absorption and translocation studies (Ark, 1947 modified by Rema Devi 1968) using bits of leaf, stem and root tissues at 24 and 48 hours and (3) the tikka disease of ground nut by spraying at 7 days interval for a period of 35 days. The number of spots in the newly emerging leaves were counted.

Absorption and translocation studies on ground nut plants using the above dilutions showed phytotoxic effects at 1/100, 1/200 and 1/300 dilution. Such plants showed symptoms of wilting within 2 hours and completely wilted

Table 1

Effect streptomycetes of on the germination of fungai spores in percentage

	Dilutions used									
	1/100		1/200		1/300		1/400		1/500	
	NG	G	NG	G	NG	G	NG	G	NG	G
<i>Helminthosporium oryzae</i>	68	32	66	35	53	47	48	52	39	61
<i>H. halodes</i>	76	24	71	29	63	37	53	47	24	76
<i>Cerynespora cassiicola</i>	81	(9)	74	26	68	32	51	49	48	55
<i>Cercospora henningsii</i>	80	20	76	24	63	37	50	50	32	68
<i>C. personata</i>	73	27	60	40	59	41	40	60	34	66

NG: non-germinated

G: germinated.

within 24 hours. No phytotoxic effects were noted with the other dilutions namely 1/400 and 1/500. They were easily absorbed and translocated into the plant. Leaf stem and root tissues collected after 24 and 48 hours exerted a definite inhibitory effect on the test organism *Bacillus subtilis* (Table 2).

Table 2
Zone of inhibition of *B. subtilis* measured in mm.

	Concentration used						Control		
	Leaf	Stem	Root	Leaf	Stem	Root	Leaf	Stem	Root
24 hours after spraying	5.5	5.0	1.0	5.0	4.5	1.0	0	0	0
48 hours after spraying	5.0	4.1	1.0	4.5	4.0	1.0	0	0	0

The effect of spraying the culture filtrate on the incidence of Tikka disease in ground nut showed that there was a reduction of about 50%. Leaves which emerged after the spraying showed lesser number of spots.

The culture filtrate inhibited the germination of fungal spores, due to the antifungal activity possessed by it. Absorption and translocation studies showed that the antibiotic was well absorbed and translocated systemically on the ground nut plants. This is clearly indicated by the well defined zone of inhibition noticed even after 48 hours. It was also found to check the incidence of leaf spot in ground nut plants. That *Streptomyces* sp. and also the antibiotics derived from some of them can inhibit the growth of certain plant pathogens is already known (Trinici and Gull, 1970).

Acknowledgement

The author is grateful to Dr. J. Sam Raj, formerly Dean, College of Agriculture, Vellayani for the help rendered in the progress of this work.

സംഗ്രഹം

സ്ട്രെപ്റ്റോമൈസസ് എന്ന ഒരുതരം ആക്ടിനോമൈസറ്ററിനെപ്പറ്റി പരീക്ഷണ ശാലയിൽ നടത്തിയ ഗവേഷണങ്ങളിൽനിന്നും അതു് കമീയം വിത്തുകളുടെ ബീജാങ്കുരണത്തെ

തടയുന്നതായി കാണാൻ കഴിഞ്ഞു. നിലപ്പാടല ചെയ്തിൽ നടത്തിയ പരീക്ഷണങ്ങളിൽ ഇലകൾ ദ്രാവകരൂപത്തിലുള്ള ലായനിയെ ആഗിരണം ചെയ്യുന്നതായും തൽഫലമായി പുതുതായി ഉണ്ടാകുന്ന ഇലകളിൽ ഇലപ്പൊട്ടുരോഗം കാര്യമായും കാണാൻ കഴിഞ്ഞു.

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