

Short Communication

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COMBINED EFFECT OF CERTAIN SUBSTANCES ON GROWTH OF *DRECHSLERA ORYZAE*

VINAY KUMARI, S. JARIWALA AND BHARAT RAI

Department of Botany, Banaras Hindu University, Varanasi - 221 005, India

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The present paper deals with an influence of integrated use of root extract of *Asparagus adscendens*, dithane M-45 and culture filtrates of some potent antagonists in different combinations on growth response of *Drechslera oryzae* causing brown spot disease of rice.

Root extract of *Asparagus adscendens*, fungicide dithane M-45 and culture filtrates of four potent antagonists viz., *Aspergillus niger*, *A. terreus*, *Trichoderma viride* and *Streptomyces* sp. were selected after screening their effectiveness against the test pathogen.

Different combinations of the microbial culture filtrates were prepared with three concentrations of root extract of *A. adscendens* and dithane M-45. The first combination comprised the individual culture filtrate, root extract and dithane M-45, the second and third consisted of the culture filtrate with fungicide and root extract respectively. The combination of root extract with fungicide served the fourth combination. Three different concentrations like 5, 10 and 20% of the culture filtrate and the root extract and 50, 100 and 150 ppm of the fungicide (prepared in double strength on active ingredient basis in sterilized distilled water under aseptic condition) were used for the above combinations and were amended in sterilized PDA medium.

The amended PDA medium of each combination was then poured in sterilized Petri dishes in aseptic condition in triplicate and allowed to solidify, Thereafter each Petri dish was inoculated centrally with a 5 mm agar block, cut from the margin of actively growing culture of *D. oryzae*. The test pathogen inoculated onto PDA without any amendment served as control. The per cent reduction in radial growth of the pathogen was determined after the 7th day of incuba-

tion at $25 \pm 1^\circ\text{C}$.

Generally all the combinations were found to significantly ($P = 1\%/5\%$) inhibit the radial growth of the pathogen. The effect of culture filtrates of *A. terreus* and *T. viride*, in combination with root extract and dithane M-45, was most inhibitory causing, more or less, complete inhibition (100 and 93% respectively) of growth of the pathogen even at the minimum concentration (5% root extract and culture filtrate and 50 ppm dithane M-45).

The culture filtrates of *A. niger* and *Streptomyces* sp. were more effective with root extract of *A. adscendens*, causing growth inhibition of the pathogen more than 80% at lower concentration and up to 99% at higher concentration. The inhibitory effect of the culture filtrates of *A. terreus*, *A. niger*, *T. viride* and *Streptomyces* sp., the root extract of *A. adscendens* and the fungicide dithane M-45, individually against the pathogen *in vitro* has been reported earlier by Vinay Kumari (1992). Antagonistic nature of *Aspergillus* spp. has been very well recognized by several earlier workers also (Marcus, 1947; Hsi, 1968; Jones *et al.*, 1984; Jariwala *et al.*, 1991). Similarly antagonistic potential of *Asparagus officinalis* against nematodes has been reported by Rohde (1972). In the present investigation the maximum inhibition in growth of *Drechslera oryzae* was observed when the culture filtrate of potential antagonists were combined with other substrates indicating an additive inhibitory effect. Various workers (Chet *et al.*, 1979; Harman *et al.*, 1981; Sawant and Mukhopadhyay, 1990) have also demonstrated the combined use of two or more substances to successfully control various diseases.

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