

Short Communication

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RHIZOSPHERE MYCOFLORA OF SOME CULTIVATED FERNS

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Considerable work has been carried out on the rhizosphere mycoflora of higher plants [1-3] but practically no information is available on this aspect of Pteridophytes. In view of these facts an attempt has been made to study the rhizosphere mycoflora of three fern species *Abacopteris multileneata*, *Microsorium punctatum* and *Nephrolepis exaltata*.

Parkinson soil plate method was used to isolate fungi from the soil collected from both rhizosphere and non rhizosphere of the ferns [4]. Soil sample adhering on the tip of small spatula was transferred to petridishes containing molten peptone dextrose agar [5]. There were five petridishes for each sample and the dishes were incubated at 28°. Averages weight of each transfer by the flattened needle was determined to assess the fungal population which is expressed in number of organisms per gram of soil. The frequency of fungi has calculated as follows:

$$\text{Frequency of fungi} = \frac{\text{No. of plates containing a particular fungus}}{\text{No. of plates poured}} \times 100$$

In all 16 species of fungi were isolated from both rhizosphere and non rhizosphere (Table 1). There were qualitative differences between non-rhizosphere and rhizosphere mycoflora of the three ferns. The number of fungi in the rhizosphere was 7 in *Microsorium punctatum*, 9 in *Nephrolepis exaltata* and 12 in *Abacopteris multileneata* as against 8 in non-rhizosphere. Thus *Abacopteris multileneata* harboured more fungi. *Aspergillus flavus*, *Alternaria humicola* and white sterile mycelium were isolated from the rhizosphere of all the fern species. *Aspergillus terreus* was encountered from the non-rhizosphere only. *Aspergillus luchuensis*, *Curvularia lunata* and *Rhizoctonia solani* were found associated with the rhizosphere of *Microsorium punctatum*. On the other hand *Helminthosporium sativum* was restricted to the rhizosphere of *Nephrolepis exaltata*.

The fungal population was highest in non rhizosphere followed by the rhizosphere of *M. punctatum*, *A. multileneata* and *N. exaltata*. This is however in conformity with the earlier findings [6] but are in disagreement with those of [7]. It is likely that anti-fungal exudates produced by rhizome may be responsible for the low fungal population in rhizosphere as the ferns are known for such antimicrobial exudates [8].

Table 1. Percentage frequency of fungi in rhizosphere (R) and non rhizosphere (NR) of *Microsorium punctatum* (M.p.) *Nephrolepis exaltata* (N.e.) and *Abacopteris multileneata* (A.m.).

Fungi	Frequency %			
	M.p. (R)	N.e. (R)	A.m. (R)	(NR)
<i>Aspergillus clavatus</i>	-	-	20	60
<i>A. flavus</i>	20	20	20	20
<i>A. funiculosus</i>	-	-	20	-
<i>A. fumigatus</i>	-	20	20	-
<i>A. luchuensis</i>	20	-	-	-
<i>A. terreus</i>	-	-	-	20
<i>Alternaria humicola</i>	20	40	40	-
<i>Botrychium</i> sp.	-	-	60	100
<i>Cladosporium elatum</i>	-	20	20	-
<i>Curvularia lunata</i>	40	-	-	-
<i>Phoma</i> sp.	-	20	20	-
<i>Rhizoctonia solani</i>	20	-	-	-
<i>Rhizopus oryzae</i>	-	-	20	-
<i>Helminthosporium sativum</i>	-	20	-	-
<i>Trichoderma alba</i>	-	40	-	80
<i>T. viride</i>	-	20	40	60
White sterile mycelium	80	100	80	80
Grey sterile mycelium	20	-	20	60
Population/g. of dry sol	48,000	40,000	46,000	80,000

Key words: Ferns, Fungi, Rhizosphere.

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