Study of Substrate Analysis Of *Drynaria quercifolia* (L.)J.Sm: An Epiphytic Fern From Sindhudurg District (Maharashtra).

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Abstract
The present paper deals with the substrate analysis of *Drynaria quercifolia* with reference to ecological parameters and nutrients. *Drynaria quercifolia* is nest epiphytic prefer sites with massive accumulations of humus. Edaphic (humus substratum) and substrate analysis was carried out with respect to this epiphytic species.
Key words: substratum, *Drynaria quercifolia,* humus, climatic.

Introduction:

The environment of epiphytes are unique with respect to essential physical characteristics (Benzing, 1987) and at the same time to some extent similar to the environment of epiliths. *Drynaria quercifolia* is a nest epiphytic fern with massive accumulation of humus. Formation of humus is a slow process. Most epiphytes prefer acidic, humid, less fertile soils. There is little information on physico-chemical peculiarities of the substrates of epiphytes, but it is clear that there often is a deficit of available nutrients (Benzing, 1987). *Drynaria* is a thick massive rhizome, dropping solutions from the sporophyte in the rainy season (Valter, 1968).

However, up till now no details have been published with respect to the ecological characteristics. Thus in the present investigation an attempt has been made to study these parameters.

Material and Methods:

Materials: The material was collected from North-Western Ghats of Maharashtra, from Kudal and Kasal from Sindhudurg District in rainy season. The substratum (humus) was collected randomly from the study area.

A. Methods: Soil conductivity was measured using an EC meter (Systronics 304) and pH by pH meter (APX 175E). Soil organic matter content was determined by the modified method of Walkley & Black (1935).

Result and discussion:

The results of substrate analysis of *Drynaria quercifolia* are depicted in Table1. It is clear from the data that the species prefer acidic soil. Electrical conductivity is 6.58 mmhos/cm and water holding capacity is more i.e. 59.19%. Each species of fern has its own preferences for temperature, humidity, soil type, moisture, pH etc. and in many cases are very specific indicators of the conditions they need. Organic matters are seen to be maximum than organic carbon. The substratum is also rich with *Azatobactor* and N_2 fixing bacteria sufficient for the establishment of the species. The species is found to be growing on humus rich substratum with sufficient moisture and water retentively.

Amongst the micronutrient studied iron contents are found to be more than the other, iron can be correlated with their chlorophyll contents. Whereas potassium and sodium contents are found to be less, K^+ uptake mechanism is of efficient type in this fern (Epstein 1965). Na^+ uptake is dependent on climate and the place where the fern is growing (Shetty 1971).

There are evidences that accumulations of humus can quickly absorb water, for instance, during a short rain and retain within a long time (Johansson, 1974) what is undoubtedly important for epiphytes. Accumulated humus is apparently a water reservoir.

Sr.No.	Parameter	Unit	Value
1	pH		6.94
2	E. C.	mmhos/cm	0.58
3	Total minerals	%	24.09
4	Organic Carbon	%	14.7
5	Organic matter	%	25.34
6	C/N		17.71
7	Total Volatile solid	%	75.91
	MACRONUTRIENT		
1	Nitrogen	%	0.83
2	Phosphorus (as P2O5)	%	0.97
3	Potassium (as K2O)	%	0.054
4	Calcium	%	0.60
5	Magnesium	%	0.73
6	Sodium	%	0.055
	MICRONUTRIENT		
1	Iron	Ppm	1165
2	Manganese	Ppm	179
3	Zinc	Ppm	7.85
4	Copper	Ppm	80.5
5	Molybdenum	Ppm	2
6	Boron	Ppm	3

Table No.1: The ecological characteristics of *Drynaria quercifolia L.*(J

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Amongst the nutrients, the substratum is rich in phosphorus and iron contents and less amount of potassium and sodium. The species are growing well at low light intensities. Most of the ferns we studied are growing well at low light intensities that occur in shady conditions. Based on analysis of microclimatic data from our studies, fern growing in the study regions appear to be tolerant of average 35° to 45°C temperature and 50 to 85 % humidity with low light intensity.

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