

Short Communication

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SOME OBSERVATIONS ON THE AEROMYCOFLORA USING A COMBINATION OF VERTICAL, DURHAM & ROTOROD SAMPLERS

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Aeromycological studies were conducted in Jabalpur during January to December 1993 at two sites of the city using Vertical sampler, Durham sampler, Rotorod sampler & petriplates with PDA. Altogether 77 types of fungal spores were identified, 1 belonging to Zygomycotina, 24 to Ascomycotina, 4 to Basidiomycotina and 48 to Deuteromycotina. The analysis of the spore catches revealed that the spores of *Aspergilli* dominated the airspora. The other predominant forms were *Cladosporium*, *Alternaria*, *Curvularia*, Basidiospores, Smut spores, Rust spores, *Nigrospora* and *Helminthosporium*.

Key Words: Sampling, airspora, fungi, Jabalpur

An aerobiological study has been carried out from January to December 1993 at two locations in Jabalpur city, to obtain a clear picture of the predominant fungal spores. Air sampling was carried out fortnightly for one year using Durhams sampler (Durham, 1946). Vertical sampler (Gregory, 1961) and Rotorod sampler (Harrington, 1959). Simultaneously Petriplates with PDA were also exposed to culture the fungal genera. Slides were mounted in glycerine jelly and scanned under 40x magnification of the microscope. Identification was confirmed using (Ellis, 1971, 1976, Barnett & Hunter, 1982, Tilak 1989). Altogether 77 types of fungal spores were identified in this study, 1 belonging to Zygomycotina, 24 to Ascomycotina, 4 to Basidiomycotina and 48 to Deuteromycotina. The analysis of the spore catches compiled from all the tables revealed that the spores of *Aspergilli* dominated the airspora and contributed (57.7%) to the airspora, followed by *Cladosporium* (50.6%) the other predominant forms were *Alternaria* (17.0%), *Corvulari* (11.8%) and Basidiospores (19.1%), & Smuts (19.9%). The dominant ascospores were *Didymosphaeria* (4.3%) *Chaetomium* (1.6%), *Hysterium* (1.5%), *Oothia* (1.8%) & *Sordaria* (1.6%) Zygomycotina was represented only by *Cunninghamella* contributing 0.27% to the airspora. Unidentified spores formed 0.9% and hyphal fragments contributed 20.8% to the airspora. On a comparative basis of samplers, most types of spores were trapped on Durham's sampler and least types on vertical sampler. Vertical and Durham are passive samplers exposed to the air for 24 hours. Rotorod is a portable battery operated impaction sampler, & was

run at fortnightly intervals for half an hour. Even then it has given good spore catches and thus is very efficient as seen in the Table no. 1. High concentration of *Aspergilli* was observed by D'Silva & Freites (1981) at Bombay. *Cladosporium* occupied second position in reports from India and abroad. (Sreeramulu & Ramalingam, 1966, Gregory & Hirst 1957). Data of sampling period has revealed that the frequency of Deuteromycetes was comparatively more & this class comprised the highest percentage on all samplers. As seen in this study also the overwhelming majority of Deuteromycotina spores has been recorded by several workers (Vittal & Gloory 1985).

There is a great need for understanding the prevalence of mycoflora of different regions and its effects on human health. The continuous monitoring of airborne allergens is a valuable tool for diagnosis & treatment of allergy patients. It is hoped that this study may help to find out suitable means to control the various types of human allergies induced by fungal spores.

REFERENCES

- Barnett & B B Hunter 1972 *Illustrated Genera of Imperfect Fungi* Burgess Publ Co Minneapolis Minnesota.
- D'Silva A M & V M Freites 1981 The role of aerial mycoflora of Bombay in respiratory allergies *Proc Nat Conf Env Bio India* 63-70.
- Durham O C 1946 The volumetric incidence of atmospheric allergens *J Allergy* 17 79.80.

Table 1. Comparative table showing the spore types trapped on the different samplers during 1993.

Sr. No.	Spore Type	Percentage contribution on each sampler		
		Vertical	Durham	Rotorod
1.	<i>Cunninghamella</i>	-	0.223	.052
2.	<i>Bitrimerospora</i>	.143	.029	.026
3.	<i>Calospora</i>	.214	.104	.026
4.	<i>Chaetomium</i>	-	.566	1.136
5.	<i>Didymosphaeria</i>	2.431	1.044	.924
6.	<i>Hypoxylon</i>	-	.015	-
7.	<i>Hysterium</i>	.858	.581	.290
8.	<i>Leptosphaeria</i>	-	.088	.052
9.	<i>Lophiostoma</i>	1.001	.268	.237
10.	<i>Massarina</i>	-	.059	-
11.	<i>Melanospora</i>	.929	.059	.396
12.	<i>Metasphaeria</i>	-	-	.026
13.	<i>Meliola</i>	.071	.029	-
14.	<i>Nodulosphaeria</i>	1.072	.298	.343
15.	<i>Othia</i>	1.144	.492	.317
16.	<i>Parodiella</i>	-	-	.026
17.	<i>Passerinella</i>	-	.208	.264
18.	<i>Pleospora</i>	.858	.179	.396
19.	<i>Pringsheimia</i>	.500	.149	.132
20.	<i>Rosellinia</i>	-	-	.026
21.	<i>Sordaria</i>	1.144	.298	.237
22.	<i>Sporormia</i>	-	.104	.528
23.	<i>Teichospora</i>	.643	.208	.449
24.	<i>Valsaria</i>	-	.044	.105
25.	<i>Xylaria basidiomycotina</i>	-	.044	.105
26.	Basidiospores	10.868	3.103	5.206
27.	Rusts	6.864	2.596	3.805
28.	Smuts	8.508	50237	6.289
29.	Uredospores	-	0.059	-
	Deuteromycotina			
30.	<i>Alternaria</i>	7.078	5.028	5.047
31.	<i>Aspergilli</i>	10.725	17.591	29.598
32.	<i>Beltrania</i>	-	.029	0.079
33.	<i>Bispora</i>	1.144	1.313	1.242
34.	<i>Cephalophora</i>	-	.059	-
35.	<i>Chlamydomyces</i>	-	.059	.502
36.	<i>Cladosporium</i>	10.582	25.962	14.297
37.	<i>Cordana</i>	0.143	.358	.845
38.	<i>Corynespora</i>	.715	.208	.132
39.	<i>Curvularia</i>	4.075	.208	.132
40.	<i>Dendrographium</i>	-	-	.079
41.	<i>Dictyoarthrinium</i>	-	.029	.105
42.	<i>Dendryphiopsis</i>	-	-	.052
43.	<i>Dictyosporium</i>	-	.029	-
44.	<i>Diplodia</i>	1.144	.223	.105
45.	<i>Drechslera</i>	-	.059	.343
46.	<i>Epicoccum</i>	.929	.581	.369
47.	<i>Excipularia</i>	-	.059	.105
48.	<i>Exosporium</i>	.357	.193	.343
49.	<i>Fusariella</i>	-	.059	.052
50.	<i>Fusarium</i>	-	.044	.211
51.	<i>Haplosporella</i>	-	.149	.264
52.	<i>Helmithosporium</i>	.214	.954	1.057
53.	<i>Heterosporium</i>	.643	.373	.211
54.	<i>Lacellinopsis</i>	-	.537	.396
55.	<i>Melanographium</i>	-	.015	-
56.	<i>Mitteriella</i>	-	.238	.184
57.	<i>Monodictys</i>	-	.044	-
58.	<i>Memnoniella</i>	.429	.746	.132
59.	<i>Nigrospora</i>	6.220	2.447	2.642
60.	<i>Papularia</i>	-	.223	-
61.	<i>Periconia</i>	-	.969	.607
62.	<i>Pestalotia</i>	.643	-	-
63.	<i>Phaeotrichoconis</i>	-	.029	.052
64.	<i>Pithomyces</i>	2.073	.596	.924
65.	<i>Pseudotorula</i>	-	.268	.211
66.	<i>Pyricularia</i>	-	.059	.502
67.	<i>Ramulispora</i>	-	.015	-
68.	<i>Sirodesmium</i>	-	.104	.079
69.	<i>Spegazzinia</i>	.071	.029	.026
70.	<i>Sporidesmium</i>	-	.015	-
71.	<i>Sporothrix</i>	-	.029	-
72.	<i>Stachybotrys</i>	.572	.223	.026
73.	<i>Tetraploa</i>	-	.581	.290
74.	<i>Torula</i>	-	.074	.105
75.	<i>Trichocladium</i>	.143	.074	.184
76.	<i>Trichoconis</i>	2.145	1.238	2.140
77.	<i>Algal fragments</i>	6.944	6.789	7.214
78.	<i>Fungal fragments</i>	2.145	1.238	2.140
79.	Insects parts	.429	.387	-
80.	Insect scales	-	.283	.449
81.	Plant parts	.643	.686	-
82.	Pollen grains	4.79	9.623	3.382
83.	Protozoan cyst	.143	.104	-
84.	Unidentified	.429	.373	.237

Ellis M B 1971 *Dematiaceous Hyphomycetes* CMI Kew Surrey Englan p 608.

Ellis M B 1976 *More Dematiaceous Hyphomycetes* CMI Kew Surrey England p 506.

Gregory P H & J M Hirst 1957 The summer air spora of Rothamsted in 1952 *J Gen Microbiol* **17** 135-152.

Gregory P H 1961 *The Microbiology of the Atmosphere* Interscience publishers New York p 233.

Harrington J B 1959 High efficiency pollen sampler for use in clinical allergy. *J Allergy* **30** 316.

Sreeramulu T & A Ramalingam 1966 A two year study of the airspora of a paddy field near Vishakhapatnam *Ind J Agric Sci* **36** 112-132.

Tilak S T 1989 *Airborne Pollen and Fungal Spores* Vaijayanti prakashan Aurangabad.

Vittal B P R & A L Gloory 1985 Airborne fungus spores of a library in India, *Grana* **21** 129-132.