

RESEARCH ARTICLE

AEROALGAL SAMPLING OF A CINEMA HALL

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ABSTRACT

Aero-algal sampling, in an air cooled cinema hall, with approximate capacity of 1200 persons was attempted for the first time, to study impact of aero-algal forms on public health & also effect of air cooler on the occurrence of these forms. Sampling was done using rotarod air sampler with duration of 30 minutes exposure for each sampling. Out of 3 samples obtained (3 slides & 3 cultures), total 13 aero-algal forms belonging to cyanophyta & chlorophyta were identified. Forms such as *Trentipholia* (46.15%) was found to be dominant followed by *Phormidium truncicola*, *Phormidium muscorum*, *Phormidium luridum*, *Merismopedia punctata*, *Chroococcus minutes*, *Microcystis stagnalis* & *Pleurococcus* each representing (7.69%) respectively. Forms such as *Microcystis* & *Phormidium* reported to be allergenic to human being were also encountered. Further studies in this aspect are necessary, which will help to find out some remedial solution to minimise exposure to such health hazards..

Keywords : Aero-algae, Cinema Hall, Allergy, Public Health

INTRODUCTION

Aero-algal studies have been done from various different aspects which can fall into either of the following broad two categories: - Extra mural or Intra mural studies.

Enrenberg (1844) identified 13 algal genera from dust samples collected at sea. Brown et.al (1963, 1964) reported the dispersal of various aero-algal forms from across the island of Oahu, Hawaii and the heterogeneity observed among various aero-algal forms. Floger et.al (1976) reported fresh water diatoms from a dust storm. McGraw (1976) during his studies of Taylor, Dry Valley, Victoria Land and Antarctica, concluded that algae are frequently picked up from soil by strong wind current. Holand (1973, 1977) reported over 40 genera of algae collected from house dust samples. Ehrensman and Hatch (1975) at California studied the effect of relative humidity on the

survival of air borne unicellular algae. Carson and Brown (1976) correlated terrestrial and air-borne algae with meteorological conditions on the island of Hawaii. Lustgraaf (1979) reported algae from indoor air and mattress dust. Roy Ocotta and Carrera (1993) reported algae from the indoor and outdoor atmosphere of waste water treatment plant. Sheno and Ramlingam (1976) reported the rain as a source for some aquatic and terrestrial algae to become air-borne. Chanda and Pandey (1982) reported several algal forms growing on the walls of buildings at Calcutta. RamchanderRao and Jadhav (1996) using foot wear dust, food dust, leaf dust, bed dust, nasal secretion and spider webs reported 22 algal genera, Pandkar (2011, 2012) reported presence of allergenic algae at human breathing level and Fan dust sampling as an effective mode of aero sampling and so on.

All the above studies indicate towards the presence of aero-algal forms from different sources and conditions, it's mode of dispersal and allergenic forms. But studies with respect to its direct impact on public health have not been much emphasised. Hence in the present studies, the effect of aero-algal forms on the public health (visiting a cinema hall) was considered.

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MATERIAL AND METHODS

Panchsheel cinema hall is situated in the busy locality of Sitabuldi market, Nagpur, Maharashtra. It is a big air cooled hall with approximate capacity of 1200 and running three shows every day. From three different spots, three samples were collected from May- June respectively. (Table- II).

Sampling was done using rotarod air sampler (Herrington, 1959), with the exposure of 30 minutes for each sampling. Two parallel celloclaps were mounted across two bars of the sampler. A thin layer of petroleum jelly was spread on the non- sticky surface. Operational time of the sampler was noted and one of the cellophane strips was mounted on a clean glass slide in glycerine jelly and another strip was dropped in a sterile test tube containing B.G.11 culture medium. Entire mounting and culturing procedures were carried out on the sampling sites, to avoid contamination during transit. Cultures were allowed to grow under natural conditions.

Algal growth was observed after 3-4 weeks. Slides were prepared using iodine stain and glycerine as mounting medium. Slides were scanned for algal identification. The algal genera were identified visually on the basis of their morphological characters by comparing them with the standard literature available (Fritsch (1935s, 1945) and Desikachary (1959).

RESULTS & DISCUSSION:

Out of 3 samples obtained (3 slides & 3 cultures), total 13 aero-algal forms belonging to cyanophyta & chlorophyta were identified. Forms such as *Trentipholia* (46.15%) was found to be dominant followed by *Phormidium truncicola*, *Phormidium muscorum*, *Phormidium luridum*, *Merismopedia punctata*, *Chroococcus minutes*, *Microcystis stagnalis* & *Pleurococcus* each representing (7.69%) respectively. (Table-I).

Trentipholia was found to be dominant form, represented in all the three samples collected. Forms such as *Pleurococcus*, *Phormidium mucosum*, *Phormidium luridum* and *Merismopedia punctata* were observed from spote-I (culture) only. Similarly *Phormidium truncicola* from spote-II (slide), *Chroococcus minutes* from spote-II (culture) and *Microcystis stagnalis* from spot-III (culture) were observed. (Table-II)

From the above observation it is clear that maximum no of aero-algal forms 62.5% were encountered from spot-I i.e. Inside of entrance to the hall, where less air is been circulated as compare to the other two spots. Spot- II (one of the cinema hall seat) and Spot-III (on the stage near the cinema screen) show 37.5% and 25% of total aero-algal spora respectively (Table-II).

Table-1: Total aero-algal forms encounter from a cinema hall

SR. NO	PARTICULAR	SLIDES	CULTURES	TOTAL
1	Number of samples	3	3	3
2	Duration of sampling (Minutes)	90	90	90
3	Total algal forms recorded	7	6	13
4	Cyanophyta	1	5	6
5	Cocoidcyanophyta	----	3	3
6	Filamentous cyanophyta	1	2	3
7	Chlorophyta	6	1	7
8	<i>Trentipholia</i>	6	----	6
9	<i>Pleurococcus</i>	----	1	1
10	<i>Phormidium truncicola</i>	1	----	1
11	<i>Phormidium mucosum</i>	----	1	1
12	<i>Phormidium luridum</i>	----	1	1
13	<i>Merismopediapunctata</i>	----	1	1
14	<i>Chroococcusminutes</i>	----	1	1
15	<i>Microcystisstagnalis</i>	----	1	1

Table-2 : Summary of aero-algal forms encounter from different sampling spots from a cinema hall.



FORM	SPOTE-I		SPOTE-II		SPOTE-III		TOTAL
	SLIDE	CULTURE	SLIDE	CULTURE	SLIDE	CULTURE	
<i>Trentipholia</i>	01	-----	03	-----	02	-----	06
<i>Pleurococcus</i>	-----	01	-----	-----	-----	-----	01
<i>Phormidium mucosum</i>	-----	01	-----	-----	-----	-----	01
<i>Phormidium truncicola</i>	-----	-----	01	-----	-----	-----	01
<i>Phormidium luridium</i>	-----	01	-----	-----	-----	-----	01
<i>Merismopediapunctata</i>	-----	01	-----	-----	-----	-----	01
<i>Chroococcus minutus</i>	-----	-----	-----	01	-----	-----	01
<i>Microcystis stagnalis</i>	-----	-----	-----	-----	-----	01	01

SPOT-I Inside of entrance to the hall; **SPOT-II** One of the cinema hall seat; **SPOT-III** On the stage near the cinema screen.

CONCLUSION:

It has been observed that the people ranging from age-group, from few months- near about eighty years were the frequent visitors to various cinema halls for their entertainment. They remain in this hall for at least three hours per show. During this period they are exposed to allergy causing algal forms, present in air. Hence there is a need to study the presence and listing of such aero-algal forms and to find out ways which will help in minimising the aero-algal counts.

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