



Aeromycoflora of Vegetables and Fruits market environment and their sustainable management

Amit

ABSTRACT

Aerosols consists of fungal spores, pollen grains, bacteria, viruses, insects, protozoa, hyphal fragments and many other unidentified particles were found in this market area. In vegetable and fruits market environment aeromycoflora contains mostly fungal spores which causes the diseases to fruit and vegetable and also the various allergies to human beings. These airspora responsible for the degradation and weakening of the natural materials, an aerobiological survey of vegetable and fruits market environment at Ashti areas. In this investigation we have used the apparatus Tilak Air Sampler [Tilak and Kulkarni1970] and culture plate exposure method. some of them are toxic and causing serious health hazards in human beings as well as due to their higher concentration in the environment they create pollution. Among them fungal spores taken into consideration to find out of the status of various types of allergic and pathogenic spores causing health hazards to plants and human beings. The high concentration of *Aspergillus flavu,s* [12.25%], followed by *Alternaria*[7.25%],sporidesmium[6.85%], *penicilium*[5.99%], *curvularia*[5.78] and *hyphal fragment*[4.74%] found in market areas. The present aerobiological investigation was carried out by using petri plates for the period of one-year i.e. from 1"January to 31 December 2019." In this investigation period 31 types of fungal spores and other spores were recorded during the study. These aeromycoflora were comparatively less and it changes Day to Day and months to months due to variation in meteorological Parameters. It was discovered that high humidity, direct temperature, wind velocity these are responsible for development of diseases. It is concluded that there is a definite relationship between the fungal spores and t hemarket. Therefore, the perfect management of the waste materials is needed in the market.

KEY WORDS: - Aeromycoflora, vegetables, fruits, market Parameters, meteorological, allergic, hazards 31 fungal spores.

INTRODUCTION: -

The vegetables and fruits are included in daily diet. Viz potato, cauliflower, cabbage, lettuce, spinach, tomato, reddish, bitter guard, etc. and apple, banana, guava, pomegranate, coconut, grape, santra, strawberry and many other fruits, are rich in carbohydrates, vitamins, and mineral content. Vegetables and fruits are important food and highly nutritious ingredients which are used successfully to build up and repair the body. The yield of vegetables and fruits reduces gradually due to the soil borne fungi. The early infection caused seedling blight and later caused foliar blight, stem lesion, vine rot, fruit rot and root and crown.

In various market places spoiled material, debris dumped material due to constant build-up of spore population from fungi growing on them and other aerosols also present in that environment. This investigation parasitic aerospora of market may have working in the market clients, merchants, workers in these environment causes many diseases to the people. So, the environmental aeromycoflora constitutes one of major aspects because of the fungal propagules in the ambient air are regularly and continuously inhaled by human beings.

In metropolitan cities, in the market areas, the presence of rotten vegetables and fruits, gunny bags, paper bags, packaging materials, straw, discarded leaves and stems are the main substrates for the growth of airborne fungi, hence were conducted Ashti areas. Vegetable and fruits market areas for a period of one year i.e. "1 January 2019 to 31 December 2019." In this view of the common occurrence of allergic disorders, it is to conduct long term survey of airborne spores with clinical studies in different parts of India.

In many market places, spoiled material, dumped plant material and debris are often act as reservoirs of plant pathogens from fungi growing on them. In the environment of vegetables fruits constitutes one of the dominances of fungal spores in the airspora (1991). The spores are liberated in the air in massive concentrations and remain for a long time in the air. Some of the spores are responsible for allergic diseases such as asthma, rhinitis and cardio-respirator.

of their requirement of raw vegetables and fruits may also be caused by physical damage, action or a combination of these factors.

MATERIAL AND METHOD

In this investigation aeromycoflora was recorded at different places of vegetables and fruits market.

The survey to vegetables and fruits market was carried out for one year from "1 January to 31"December 2019.The observation were taken in one week of every month for the presence of in the market air. We have used Tilak Air Sampler.

and petriplates culture method was adopted for isolation of the aerosols. At one place 10 petriplates containing PDA medium were exposed for 10 minutes. These exposed plates were incubated at $28\pm 1^{\circ}\text{C}$ for 8 days. After Incubation period, these plates were examined for the presence of *Aspergillus flavus* colonies, other fungal spores are recorded.

RESULT AND DISCUSSION

Altogether 31 types of fungal spores were recorded, out of which Deuteronomycotina shows the highest concentration i.e. (69.76%) followed by Basidiomycotina(11.74%) Ascomycotina and Other types(8.933%) and Zygomycotina(8.388%). An average 316274 spores/m³ in vegetables and Fruits was recorded. The major fungal spore types recorded during the investigation period was *Aspergillus* (12.25%), *Rhizopus* (1.30%) *Sporidiedmium* (6.856%), *Exosporium* (0.27%), *Cucularia* (5.78%). The recorded major spores types with their percentage contribution are given in the Table-1.

TABLE-1

Fungal spores collected from vegetables and fruits market at Ashti areas- 1st Jan to 31th Dec, 2019.			
Sr.no.	Spore Type	Spores / cubic meter of air	% of individual airspora
A	Zygomycotina		
1	<i>Albugio pers. ex. sandstray</i>	6356	1.48
2	<i>Rhizopus</i>	5586	1.30
B	Ascomycotina		
3	<i>Claviceps. Tul.</i>	630	0.15
4	<i>Hypoxylon Bull ex. ff.</i>	3864	0.90
5	<i>Hysterium Tode ex. Ff.</i>	3500	0.81
6	<i>Melanospora corda</i>	2114	0.49
7	<i>Rosellina Ces ana de Not</i>	2520	0.59
8	<i>Trichospora fuck</i>	882	0.20
C	Basidiomytina		
9	<i>Basidiospores</i>	18536	4.31
10	<i>Rust spores</i>	23240	5.40
11	<i>Smut spores</i>	8722	2.03
D	Deuteromycotina		
12	<i>Alernaria Ness.</i>	31094	7.23
13	<i>Aspergillus flavus</i>	840	12.25
14	<i>Biospora corda</i>	1050	0.24
15	<i>Cladosporium</i>	88410	4.55
16	<i>Curvularia</i>	24878	5.78
17	<i>Exosporium</i>	1162	0.27
18	<i>Fusarium</i>	60	0.875
19	<i>Fusariella</i>	448	0.10
20	<i>Heterosporium</i>	3556	0.83
21	<i>Helmenthosporium Klotzsch</i>	17500	4.07
22	<i>Memnoniella</i>	2982	0.69
23	<i>Nigrospora</i>	25788	5.99
24	<i>Penicillium</i>	220	3.209
25	<i>Pithomyces</i>	3514	0.82
26	<i>Sporidesmium</i>	470	6.856
E	Other types		
27	<i>Hypal fragments</i>	20412	4.74
28	<i>Epidermal hairs</i>	40	0.583
29	<i>Insect parts</i>	6538	1.52
30	<i>Pollen grains</i>	9002	2.09
31	<i>Unidentified group</i>	1180	4.52
	Total	315184	100

Table-2: Total no. of spores found in each group

Sr.No.	Spore Type	Total numbers of spore types	Spores/m ³	% contribution
1	Zygomycotina	2	11942	2.78
2	Ascomycotina	6	13510	3.14
3	Basidiomycotina	3	50498	11.74
4	Deuteromycotina	15	201972	69.76
5	Other types	4	37172	8.933
6	unidentified	1	1180	4.52
	Total	31	316274	100

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