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EFFECTS OF THE DISPERSAL ALLERGIC POLLEN ON THE HUMAN HEALTH IN Dr.B.R AMBEDKAR OPEN UNIVERSITY, JUBILEEHILLS HYDERABAD, TELANGANA

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Abstract

The present study is helpful for analysis of air borne pollen of 18 plant taxa that were recorded in Dr.B.R.Ambedkar open university(Dr.BRAOU). The university is located at Jubilee Hills (spread over 53.63 acres coordinates Latitude: 17.4315 Longitude: 78.4197). The pollen from 08 spider web samples were collected during 2021-2022 from study area and processed by using HCL,HF and acetolysis technique with standard methods (Bera et al., 2002). In this study the following allergic pollen were recorded viz.,,Acanthaceae type,Ageratum conyzoides L,Albizia lebbek.L.,Alternanthera sessilis(L.) R.Br. ex DC,Artemesia vulgaris L.Aevera lanata(L.) Juss. ex Schult.,Azadirachta indica A.Juss.,Eucalyptus globulus Labill.,Jatropha gossypifolia L.,Mangifera indica L.Nerium oleander L.Partheniumhysterophorus L.,Peltophorum pterocarpum (DC.)K.Heyne,Plumbago auriculata Lam., and ,Prosopis juliflora (Sw.) DC.,Syzygium cumini (L.) Skeels, Tridax procumbens L.Tabebuia rosea DC. These allergic pollen affects on human health and causes allergic disorders such as Congestion or runny nose, dry cough, respiratory problems, asthma and rhinitis, hay fever/pollinosis.

Key words: Dr.BRAOU, Spider web, pollinosis.

INTRODUCTION

The pollen grains and fungal spores are spread all over the world (Omnipresent), and in every area of their occurrence they become an important instrument for scientific inquiries. The air borne pollen and spores are either preserved as fossil in the mud bottom or deposited in open surfaces, natural traps (spider webs), honey etc. These are effect the human beings and are causing allergy called pollinosis ,caused by inhalation of spores. Mucous tissue of the allergic persons contain mast cell,which have a high concentration of antibody(IgE). The IgE react with pollen antigen and activate the release of chemical mediators(Histamine),resulting in an inflammatory reaction, which, in turn, leads to the appearance of the clinical signs of allergy such as rhinitis, asthma or eczema.

Methodology

08 spider webs samples were collected from in and around Dr .Br Ambedkar open university during winter and summer season 2021-2022. The university is located at Jubilee Hills, Hyderabad, Telangana state ,which is spread over 53.63 acres with coordinates Latitude: 17.4315 Longitude: 78.4197.These spider webs were collected from the building open corners, trees and bushes by rolling the end of the stick. The methodology of spider webs was adopted from bera et al 2002.

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The spider webs were collected and stored in adhesive resealable plastic pouch,it was first treated with conc.HCL for 2-3 days and then filtered into plastic centrifuge tubes through brass mesh, centrifuge them by adding distilled water at 2-3times ,the residue was treated with HF in polythene test tube for 2-3days. Thereafter, the residue was acetolysed by Erdtman 1943,1969 acetolysis method. Three slides were prepared for each sample for the analysis of pollen grains.

Observation

Observed the pollen slides by using Olympus trinocular research microscope in Palynology and Paleo botany research lab, department of Botany ,University college of Science, Saifabad, OU, Hyderabad, Telangana state. In this study the following allergic pollen were recorded viz.,. Acanthaceae type, Ageratum conyzoides ,Albizia lebbeck., Alternanthera sessilis,, Artemesia vulgaris .Aevera lanata, Azadirachta indica, Eucalyptus globulus ., Jatropha gossypifolia, Mangifera indica, Nerium oleander, Partheniumhysterophorus, Peltophorum pterocarpum, Plumbago auriculata, Prosopis juliflora, Syzygium cumini, Tridax procumbens, Tabebuia rosea.

Table -1. plant taxa with allergic palynotaxa.

S.No.	Family	Name of taxa	Allergic action
1.	Acanthaceae	Acanthaceae type	Allergic rhinitis
2.	Amaranthaceae	Alternanthera sessilis	Nose include sneezing, nasal block, running nose and itching
3.	Amaranthaceae	Aevera lanata	Allergic rhinitis
4.	Anacardiaceae	Mangifera indica	Reduced eosinophil, ige, igg, histamine levels, IL-4, IL-5, IL-13, IL-17, IL6, GATA-3, rory, TNF α and increase in ifny level
5.	Apocynaceae	Nerium oleander	Eyes, itchy throat, sneezing and fever
6.	Asteraceae	Ageratum conyzoides	Skin allergy, rhinitis and irritation to eyes
7.	Asteraceae	Artemesia vulgaris	Respiratory allergy, skin allergy
8.	Asteraceae	Parthenium hysterophorus	Allergic rhinitis rather than bronchial asthma
9.	Asteraceae	Tridax procumbens	Hay fever allergenic
10.	Bignoniaceae	Tabebuia rosea	Sneezing, nasal block, running nose and itching.
11.	Caesalpiniaceae	Peltophorum pterocarpum	Mild symptoms
12.	Euphorbiaceae	Jatropha gossypifolia	Irritant effects (Kinghorn, 1979; Kinghorn and Evans, 1975

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13.	Fabaceae	Albizia lebbeck	Allergic rhinitis
14.	Meliaceae	Azadirachta indica	Allergic rhinitis
15.	Mimosaceae	Prosopis juliflora	Pollinosis, rhinitis, conjunctivitis, asthma
16.	Myrtaceae	Eucalyptus globulus	Asthma
17.	Myrtaceae	Syzygium cumini	Allergic rhinitis
18.	Plumbaginaceae	Plumbago auriculata	Irritates skin, irritates eyes, is harmful if ingested

Table -2: List of allergic pollen diversity and percentage contribution of airborne pollen in the atmosphere of Dr.BRAOU
From 08 spider web samples.

S.NO	Name of taxa	Quantitative analysis	Percentage
1.	Acannthaceae type	8	2.78
2.	Alternanthera sessilis	55	19.10
3.	Aevera lanata	11	3.82
4.	Artemesia vulgaris	4	1.39
5.	Mangifera indica	3	1.04
6.	Nerium oleander	8	2.78
7.	Ageratum conyzoides	18	6.25
8.	Parthenium hysterophorus	23	7.99
9.	Tridax procumbens	16	5.56
10.	Tabebuia rosea	9	3.13
11.	Peltophorum pterocarpum	13	4.51
12.	Jatropha gossypifolia	7	2.43
13.	Albizia lebbeck	15	5.21
14.	Azadirachta indica	26	9.03
15.	Prosopis juliflora	15	5.21
16.	Eucalyptus globulus	31	10.76
17.	Syzygium cumini	17	5.90
18.	Plumbago auriculata	9	3.13

Discussion

Among 18 plant taxa Alternanthera sessilis was predominately recorded(19.10%),which is encountered throughout the year ,but high number of this allergic pollen grains were noted during monsoon season. Eucalyptus globulus (10.76%) pollen were reported as the second predominant type. Higher prevalence of this pollen noted during pre winter season. The incidence of Azadirachta indica (9.03%), and rest of the recorded allergenic pollen were Parthenium hysterophorus (7.99%), Ageratum conyzoides (6.25%), Syzygium cumini

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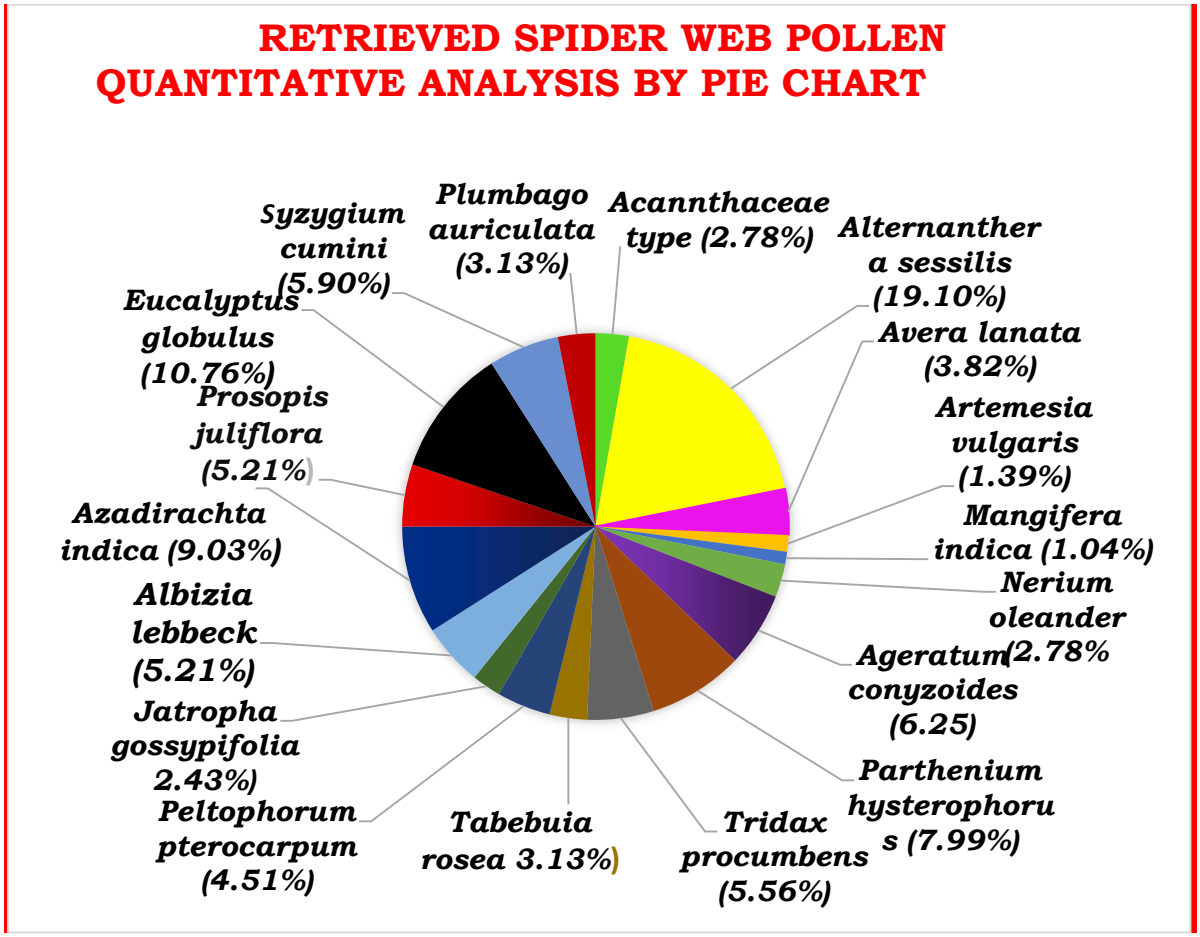
(5.90%), Tridax procumbens (5.56%), Albizia lebbeck (5.21%), Prosopis juliflora (5.21%), Peltophorum pterocarpum (4.51%), Aevera lanata (3.82%), Plumbago auriculata (3.13%), Tabebuia rosea 3.13%), Acanthaceae type (2.78%), Nerium oleander (2.78%, Jatropha gossypifolia 2.43%), Artemesia vulgaris (1.39%), Mangifera indica (1.04%).



Much attention is being paid nowadays to standardization of allergenic extracts as it is important for proper diagnosis and effective immunotherapy of allergic disorders. Different methods are employed for standardizing extracts so as to have reference preparation of each extract and to avoid batch-to-batch variability. Biological standardization is being carried out using Radio allergo sorbent test (RAST) intracutaneous test and skin prick test. In which pollen allergens were also investigated in detail for their protein content (IgE antibodies.) protein profiles and allergenic determinants using various clinico-immunological studies. (SINGH, ET AL. Asian Pacific Journal of Allergy and Immunology (1992) 10: 103·109)

Conclusion:

The aerospora composition of 08 spider web samples reveals (Pie chart-1) a high frequency Non arboreal plants over arboreal plants. The dominance of allergic pollen around Dr.B.R.Ambedkar open university recorded in winter season as the spider webs weaving mainly in winter season. Hence allergic pollen causes asthma, seasonal allergy (hay fever) and contact dermatitis in winter season. So spider webs are acting as natural pollen traps and

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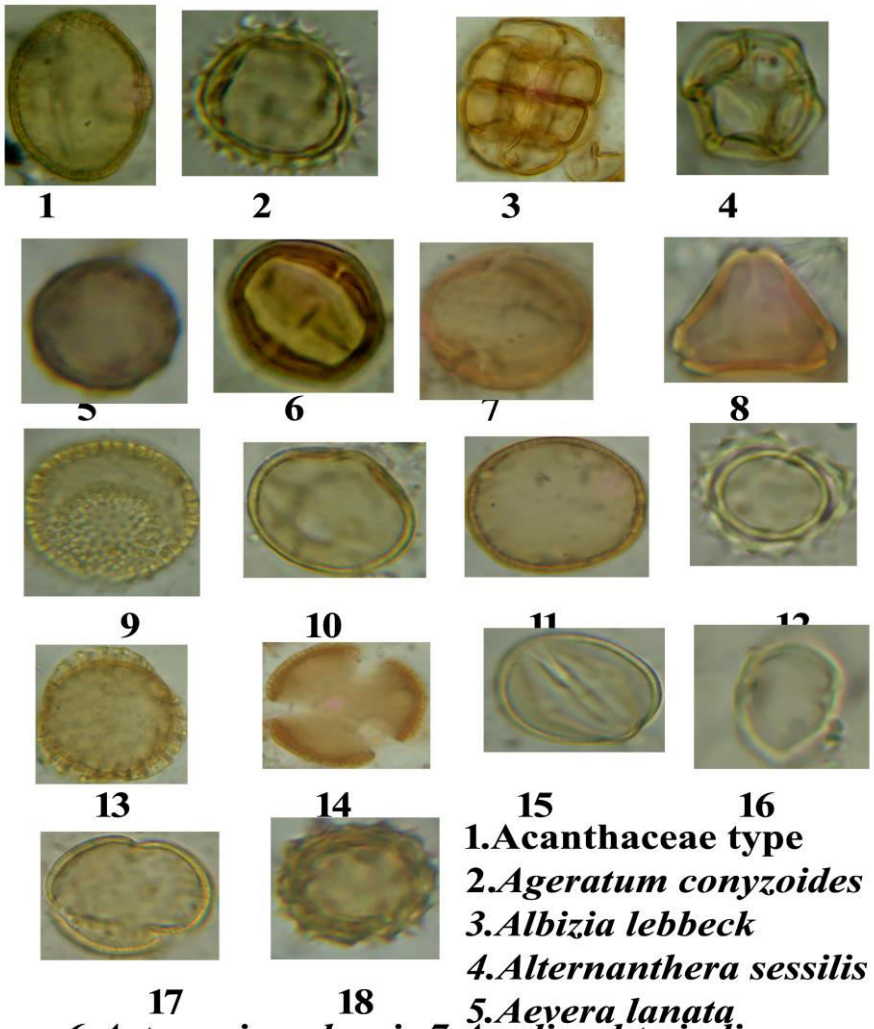
are useful to know the incidence of allergy causing pollen, monitoring of air quality and also regional vegetation growing in the vicinity of Dr.B.R.Ambedkar open university.

PLATE-1



1.Acanthaceae type
2.Ageratum conyzoides
3.Albizia lebbeck
4.Alternanthera sessilis
5.Aevera lanata
6.Artemesia vulgaris 7.Azadirachta indica
8.Eucalyptus globulus 9.Jatropha gossypifolia
10.Mangifera indica 11.Nerium oleander

12. Nerium oleander 13.Peltophorum pterocarpum 14.Plumbago auriculata
15. Prosopis juliflora 16.Syzygium cumini 17.Tabebuia rosea 18.Tridax procumbens

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