



Study of the Airborne Fungal Spores in Rosetta

Wafaa K Taia

Eman M Bassiouni, Alexandria University, Faculty of Science, Department of Botany, Alexandria, Egypt

Abstract

In this study, fungal spores within the atmosphere of Rosetta, Egypt were studied for one year (August 2015 to July 2016) employing a Hirst type volumetric pollen trap. An annual spore index equals to 8023 was recorded during the studied period. The maximum records were in August 2015, May and July 2016. *Alternaria*, *Cladosporium*, *Tilletia*, *Stemphylium*, *Chaetomium*, *Aspergillus/Penicillium*-type, *Drechslera*-type, *Mycosphaerella*, and *Epicoccum* represent the most spore producers organized in reference to their abundance. A total of nine fungal spore genera with minimum 10-day mean equal to or greater than 0.1 spores/m³ of air are involved to construct an approximate spore calendar. This aeropalynological study was compared with others elsewhere in the world. Correlation analysis between spore counts and different meteorological parameters (temperature, rainfall, and relative humidity) as well as a number of allergic patients were studied. It was obvious that the majority of the recorded fungal spores have allergenic properties, especially from April till August. This study revealed that the air in Rosetta district is polluted and care must be taken in fruit and food storage especially during the summer period.

Introduction

Allergy has become one of the most annoying health problems that have prevailed worldwide during the last decades [1,2]. Allergic reactions can result from different kinds of antigen-bearing agents such as foods, insect stings, soaps, pets, feathers, fibers, cosmetics, pollen and spores [3]. Pollen and spore allergy is considered the most typical form of allergic disease. Several works on allergy involving pollen allergy have been done all over the world. In Egypt, there are some works regarding pollen and spore allergy has been done. However, this is the first aeropalynological study done in Rosetta along the Mediterranean coast. This study deals with the investigation of fungal spores distributed in the atmosphere of Rosetta, and their relation to allergy. Also, investigate the influence of different meteorological parameters on spore concentration.

Keywords

Egypt; Rosetta; Spore calendar; Aerobiology; Spore allergy; Fungal spores



Discussion

It has been clear that allergy becomes a social problem on all continents. Thus, it is so important to know the properties of allergens and mechanisms of pollen/spore allergy to help in the protection of allergic diseases [7-9]. Accordingly, studies must include both qualitative and quantitative composition of the airborne pollen/spores in any given area. In this study, the concentration of aerospora in Rosetta region was studied for one year to investigate an approximate spore calendar. Fungal spores and particles are found in both outdoor and indoor environments, and exposure to fungi has been proved to stimulate allergic diseases.

Conclusion

According to the spore calendar of Rosetta (Northern Egypt), the identified fungal spores that spread in the atmosphere of Rosetta are also found in different Mediterranean cities and also different areas around the world. The most effective allergenic fungal spores in Rosetta are *Alternaria* and *Cladosporium* then, *Tilletia*, *Stemphylium*, *Aspergillus*, *Penicillium*, *Drechslera*-type, and *Epicoccum*. These types affect the number of patients in Rosetta, but also there are other factors that have great influence on the allergenic patient, most probably dust and pollution besides the number of airborne pollen. This study indicates that the air in Rosetta district is polluted and care must be taken in food and fruit storage especially during the summer period to decrease the causes of allergy in this area.

References

1. Majd A, Chehregani A, Moin M, Gholami M, Kohno S, et al. (2004) The effects of air pollution on structures, proteins and Allergenicity of pollen grains. *Aerobiologia* 20: 111-118.
2. D'Amato G, Liccardi G, D'Amato M, Cazzola M (2002) Allergens and pollution: Consequences for asthma. *Eur Respir J* 20: 763-776.
3. Jansonius J, McGregor DC (1996) *Palynology: Palynology; principles and applications*. American Association of Stratigraphic Palynologists Foundation 3: 945-955.
4. Soldevilla CG, González, PC, Teno PA, Vilches ED (2007) Spanish Aerobiological Network (REA): Management and Quality Manual. Ed Córdoba Servicio de Publicaciones de la Universidad de Córdoba Spain.
5. Gioulekas D, Damialis A, Papakosta D, Spiexsma F, Giouleka P, et al. (2004) Allergenic fungi spore records (15 years) and sensitization in patients with respiratory allergy in Thessaloniki-Greece. *J Investig Allergol Clin Immunol* 14: 225-231.

E-mail: taia55taxonomy@hotmail.com