Study of Isolation of Airborn Fungi inside public hospitals in Tripoli

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Abstract: Fungi are usually found in indoor environments and cause many diseases. The aim of the study was to evaluate the level of airborne fungal contamination in various hospital rooms in the following centers: Tripoli University Hospital, Diabetes Clinic - Tripoli, and Metiga Military. Medical Reference Laboratory Hospital - Tripoli, Hospital Dermatology Beer Osta Milad . A total of 100 air samples were conducted from five hospital environments. By screening 100 petri dishes containing sabouraud dextrose agar medium, Determine the places where dishes are displayed in these public hospitals, in general examination rooms, emergency rooms, etc., by removing the covers from the dishes for 15 minutes. The dishes were then placed at room temperature for a period of 72-120 hours. Through virtual examination of these dishes, it was revealed that there was dense growth covering the dishes. Microscopic examination proved that atmospheric air can be considered a repository of fungal germs and spores, and through the results obtained Many genera of fungi (8 genera) have been isolated, including opportunistic pathogenic fungi such as *Candida spp*, fast-growing, spore-producing fungi such as *Aspergillus spp*, and others. The most frequently isolated fungi include the genera *Penicillium spp* (29.6%), *Alternaria spp* (19.4%), *Streptomyces spp* (19.4%), *Aspergillus spp* (15.3%), *Candida spp* (9.2%), and *Sterilia mycelia spp* (4,1%, *Ulocladium spp* (2,0%) and *Microsporum canis* (1,0%)

Keywords: Airborne fungal, , opportunistic pathogenicfungi , repository of fungal spores ,*Penicillium spp* , Sabouraud Dextrose Agar.

Introduction

Fungi live in many different environments most of them live on land and spread in various environments such as wet and dry soil, fresh and salt water, in food and air and plant if the appropriate environmental factors are available for their growth, especially the appropriate temperature, humidity and oxygen [1] Fungal spores dispersed in the atmosphere may become cause of different pathological conditions and allergies for human beings [2] In hospital facilities Indoor Air Quality (IAQ) is a critical factor in preventing infections. Unpleasant hospital IAQ may lead to hospital-acquired infections, sick hospital syndrome, and various occupational risks [3] Airborne fungi are one of the most ubiquitous kinds of inhalant allergens which can result in allergic diseases. Fungi tend to grow in warm and humid environments with regional and seasonal variations. Their nomenclature and taxonomy are related to the sensitization of immunoglobulin E (IgE). Allergic cross-reactivity among different fungal species appears to be widely existing. Fungus-related foods, such as edible *mushrooms*, mycoprotein, and fermented foods by fungi, can often induce to fungus food allergy syndrome (FFAS) by allergic cross-reactivity with airborne fungi. FFAS may involve one or more target organs, including the oral mucosa, the skin, the gastrointestinal and respiratory tracts, and the cardiovascular system, with various allergic symptoms ranging from oral allergy syndrome (OAS) to severe anaphylaxis [4] Fungi generally exist in nature in two main forms Monomorphic Fungi, Yeast (unicellular fungi)that are spherical to ovoid in shape, their colonies are moist and mucous or of a dough-like nature yeasts, such as *Cryptococcus spp* and *Saccharomyces cerviciae*, and it has been found that some of them (semi-yeasts), such as some *Candida spp* . (Filamentous Fungi): consists mostly of branched or unbranched fine cylindrical filaments that differ in their sizes and colours and are called hypha . But there are fungi have two forms: Dimorphic Fungi: group of fungi of medical importance adapted to change its shape depending on the temperature of the human body, so it has two forms, one of which appears at the temperature of the surrounding environment, while the other appears at high temperature (human body temperature), examples of which are *Histoplasma spp* and *Blastomyces dermatidis* and *Paracoccidiodes brasiliensis* and *Coccidioides immitis* are dimorphic in nature on two forms [1] . Air pollution with fungal spores was of varying degrees in indoor environments, Fungal contamination of samples and surfaces differs from one house to another, and this mainly depends on the available conditions and factors, which vary according to the environment [5]

previous study in the city of Tikrit during the first season (Autumn) and the second season (Spring) to 24 genera . *Cladosporium spp* was found to be the most common fungus in schools air in Tikrit [6]. In Misurata -Libya study was aimed to isolate and identify fungi from some roofed areas of air conditioners and floor carpets. The results of the study showed the presence of species of filamentous fungi and yeasts such as: *Fusarium spp., penicillium spp., Aspergillus spp., Rhizopus spp*. The results of the study also showed that the numbers of fungal colonies isolated by dilution were the most common *Mushrooms spp, Rhizopus spp* and *Aspergillus spp* While *penicillium spp* have recorded fewer colonies [7]

A large number of studies have showed that various percentages of hospital infections were caused by fungi, such as *Candida albicans* and diverse species of *Aspergillus spp, Cladosporium spp, Penicillium spp*. [8] [9] [10] [11]. Various studies have investigated the fungal air quality in hospital environments

In Tripoli a study conducted to isolated Fungi from hospitals and medical clinics in various cities of Qasr Bin Ghashir each hospital was repeated during the study period, the number of times the *Aspergillus spp* was obtained was 30 and this was the largest number obtained compared to other fungi isolated, and the total number of each fungus isolated from the public health centers under study, respectively was as follows. *Geotrichum spp* 22, *penicillium spp* 25, *Rhizoctonia spp* 19, *Alternaria spp* 16, *Rhizopus spp* 14, *Cladosporium spp* 5, *Saccharomyces spp* 17, *Candida spp* 21, spp [12]. In Tehran, Iran within two months., The results showed that the predominant fungal species are *Penicillium spp ,Aspergillus spp,Cladosporium spp, Alternaria spp* .(70-2%) a study conducted by [13] The aim of the present study was to Isolation of airborne fungal **inside various public hospital in the city of Tripoli.**

In Poland studies were oriented toward the estimation of the decrease in the concentration of bacterial and fungal aerosol in the selected hospital and outpatient clinic rooms due to the work of the portable electron wind generator (EWG). [14]**.**

Materials and methods of study

Sample of study: The study was conducted on 100 petri dishes, which were distributed to public hospitals for each hospital 20 dishes**.**

Place of study: The dishes have been exhibited in the following centers: Tripoli University Hospital, Diabetes clinic-Tripoli, Metiga Military Hospital, Reference Medical Laboratory-Tripoli, Hospital Dermatology Beer Osta Milad).

Time of Study: The periods during which the dishes were exposed in the different centers, were during the month of February two visits, the first visit was dated 1/2/2023, the second visit was dated 13/2/2023.

Methods of study : Media culture used for the growth and isolation of airborne fungi : containing Sabouraud Dextrose Agar (SDA) plus chloramphenicol[13] **Fungi incubation, isolation and identification** This step was according to other study [12] [8] in brief, the plates were incubated at 25°C and r 72-120 hours isolated with plates The airborne fungi were identified using both microscopic and macroscopic methods for each colony isolated [15] [16] [17] [18] [19][20].

Department of work at varying intervals during the month of February, In cooperation with the hospitals in the region on the date of the visit, which was two visits during the month, The number of medical centers where the dishes were exposed was five centers," five hospitals", 10 dishes were taken to each Medical Center at each visit, This is after taking the prior permission to expose the dishes in some rooms, Such as general examination rooms , emergency rooms, surgery department and others, The dishes were divided according to the number of compartments allowed to be visited into a number of 1 to 2 dishes in each com- partmen, The dishes were uncovered, placed in a suitable place in the room and left exposed to the outside air for 15 minutes, The plates were then re-covered and each petri dish was given a number to distinguish it from the rest of the other dishes.

Data analysis; The analytical descriptive approach was used due to the suitability of this approach with its nature and objectives**, Chi**-square test at a significance level of 0.05 (the SPSS software version 21) .

Results

1-Total Percentage of hospitalenvironments contaminated by various genera of fungi. Data in Table (1) showed that total percentage of hospital environments contaminated by various genera of fungi, the most isolated fungi of *Penicillium spp* was (29.6%), followed by *Alternaria spp* and *Streptomyces spp* both (19.4%), *Aspergillus spp* was repeated (15.3%), *Candida spp* (9.2%) , *Sterilia mycelia spp* (4,1%), *Ulocladium spp* (2,0%) , *Microsporum canis* (1.0%), the most common hospitals found in Hospital Dermatology (26,5%) and second Tripoli University (24,5%) and the third Diabetes clinic (20,4%) , Metiga Military It fourth according to the appearance of fungi (19.4%),the least Percentage of the appearance of the fungus was(Reference Medical) (9.2%) in Table (1). In Fig (1) showed the Percentage of the fungus isolated from each public hospital

Table (1) Total Percentage of hospital environments contaminated by various genera of fungi.

Fungal genera isolated	Hospital Pearson Chi Square Value= 37.3 , Asymp. Sig. = 0 .111					Total
Count , %	Reference Medical	Tripoli University	Diabetes clinic	Hospital Dermatology	Metiga Military	
Penicillium spp	1	6	6	10	6	29
	11.1%	25.0%	30.0%	38.5%	31.6%	29.6%
Alternaria spp	3	6	5	2	3	19
	33.3%	25.0%	25.0%	7.7%	15.8%	19.4%
Streptomyces spp	1	6	2	9	1	19
	11.1%	25.0%	10.0%	34.6%	5.3%	19.4%
Aspergillus spp	1	1	5	1	7	15
	11.1%	4.2%	25.0%	3.8%	36.8%	15.3%
Candida spp	2	4	1	1	1	9
	22.2%	16.7%	5.0%	3.8%	5.3%	9.2%
Sterilia mycelia spp	1	0	1	2	0	4
	11.1%	0.0%	5.0%	7.7%	0.0%	4.1%
Ulocladium spp	0	0	0	1	1	2
	0.0%	0.0%	0.0%	3.8%	5.3%	2.0%
Microsporum canis	0	1	0	0	0	1
	0.0%	4.2%	0.0%	0.0%	0.0%	1.0%
Total	9	24	20	26	19	98
	9.2%	24.5%	20.4%	26.5%	19.4%	100.0%

2-Total Percentage of Dermatology hospital environments contaminated by various genera of fungi,

Data in Table (2) showed that total Percentage of Dermatology hospital environments contaminated by various genera of fungi, the most fungi is Examination room Record (53.8%) the second section Laboratory (38.5%), the third is two sections Queries and Pharmacy (3.8%) the following sections (Phlebotomy and Word) No fungi have been recorded , the most fungi *Penicillium spp* (38.6%) , *Streptomyces spp*(34.6), *Sterilia mycelia spp* , *Alternaria spp* (7.7%), *Aspergillus spp* , *Candida spp* and, *Ulocladium spp* (3.8 **)**

3- **Total Percentage of diabetes clinic hospital environments contaminated by various genera of fungi**

Data in Table (3) showed that total Percentage of diabetes clinic hospital environments contaminated by various genera of fungi , the most fungi is Examination room (25.0%) the following sections are Laboratory, Queries 1, Insulin therapy Where each of them recorded (15 %), and the third sections that recorded the most fungi Female ward and Resuscitation (10%) The two sections recorded a single fungi are Pharmacy and Surgical department (5.0%) and the sections that are devoid of fungi are (Queries 2, Queries 3 and Male war, the most isolated fungi of *Penicillium spp* was (30.0%), followed by *Alternaria spp* , *Aspergillus spp* was repeated(25.0%) , *Streptomyces spp*(10.0%), *Sterilia mycelia spp* and *Candida spp* both (5.0%).

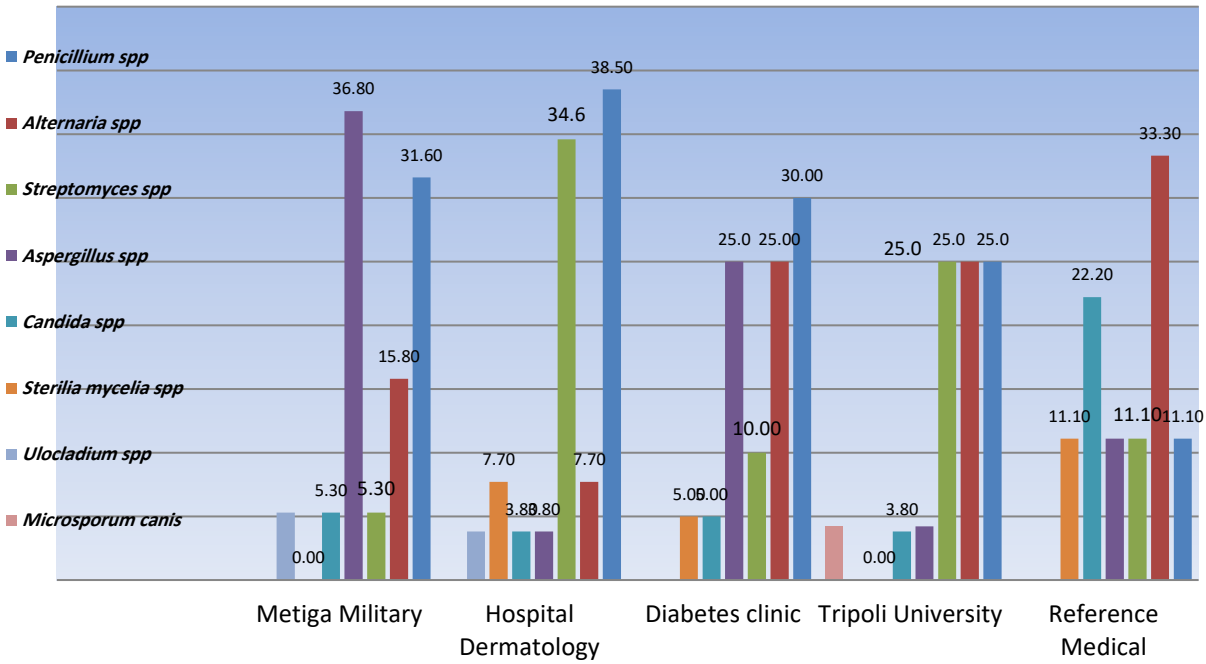

Fig (1) The Percentage of the fungus isolated from each public hospital

Table (2) Total Percentage of Dermatology hospital environments contaminated by various genera of fungi

Fungal genera isolated Count , %	Dermatology Hospital Pearson Chi Square Value= 12.5, Asymp. Sig. = 0 .81				Total
	Laboratory	Examination room	Queries	Pharmacy	
Penicillium spp	4 40.0%	5 50.0%	1 10.0%	0 0.0%	10 100.0%
Alternaria spp	0 0.0%	2 100.0%	0 0.0%	0 0.0%	2 100.0%
Streptomyces spp	6 66.7%	2 22.2%	0 0.0%	1 11.1%	9 100.0%
Aspergillus spp	0 0.0%	1 100.0%	0 0.0%	0 0.0%	1 100.0%
Candida spp	0 0.0%	1 100.0%	0 0.0%	0 0.0%	1 100.0%
Sterilia mycelia spp	0 0.0%	2 100.0%	0 0.0%	0 0.0%	2 100.0%
Ulocladium spp	0 0.0%	1 100.0%	0 0.0%	0 0.0%	1 100.0%
Total	10 38.5%	14 53.8%	1 3.8%	1 3.8%	26 100.0%

Table (3) **Total Percentage of diabetes clinic hospital environments contaminated by various genera of fungi**

Fungal genera isolated Count , %	Diabetes clinic hospital Pearson Chi Square Value= 41.7, Asymp. Sig. = 0 .20								Total
	Laboratory	Pharmacy	Queries 1	Female ward	Examination room	Surgical department	Resuscitation	Insulin therapy	
Penicillium spp	0	0	1	1	1	1	0	2	6
	0.0%	0.0%	33.3%	50.0%	20.0%	100.0%	0.0%	66.7%	30.0%
Alternaria spp	1	0	1	1	0	0	1	1	5
	33.3%	0.0%	33.3%	50.0%	0.0%	0.0%	50.0%	33.3%	25.0%
Streptomyces spp	1	0	0	0	1	0	0	0	2
	33.3%	0.0%	0.0%	0.0%	20.0%	0.0%	0.0%	0.0%	10.0%
Aspergillus spp	0	0	1	0	3	0	1	0	5
	0.0%	0.0%	33.3%	0.0%	60.0%	0.0%	50.0%	0.0%	25.0%
Candida spp	1	0	0	0	0	0	0	0	1
	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%
Sterilia mycelia spp	0	1	0	0	0	0	0	0	1
	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%
Total	3	1	3	2	5	1	2	3	20
	15.0%	5.0%	15.0%	10.0%	25.0%	5.0%	10.0%	15.0%	100.0%

4- Total Percentage of Tripoli University hospital environments contaminated by various genera of fungi

Data in Table (4) showed that total Percentage of Tripoli University hospital environments contaminated by various genera of fungi , the most fungi is CSICU (Cardiac Surgery Intensive Care Unit)Where the fungus has recorded (54.1%) and sections, Ward1, Ward2 (16.7%) and (Ward 2) and the third section are Queries (8.3%) Followed by a section MICU(Medical Intensive Care Unit) It had (4.2%) As for the Department Pharmacy It was fungus-free,t he most isolated fungi of *Penicillium spp*, *Alternaria spp* , *Streptomyces spp* (25.0 %) followed by *Candida spp* (16.7%) , *Aspergillus spp* and *Microsporum canis* both repeated (4.2%)

5- Total Percentage of reference medical environments contaminated by various genera of fungi

Data in Table (5) showed that total Percentage of reference medical environments contaminated by various genera of fungi , the most fungi is Laboratory1 (77.8%) The following two sections was recorded once for a fungi and were a section Laboratory2 and Phlebotomy (11.1%) and the section that has not recorded any fungi was Queries The most isolated fungi of *Alternaria spp* (33.3%)followed by *Candida spp* (22.2%) while *Penicillium spp* , *Streptomyces spp*, and *Aspergillus spp* and *Sterilia mycelia spp* was repeated (11.1%) .

Table (4) Total Percentage of Tripoli University hospital environments contaminated by various genera of fungi

Fungal genera isolated Count , %	Tripoli University hospital Pearson Chi Square Value= 14.1 , Asymp. Sig. = 0 .82					Total
	MICU	CSICU	Ward 1	Ward 2	Queries	
Penicillium spp	0	3	2	1	0	6
	0.0%	23.1%	50.0%	25.0%	0.0%	25.0%
Alternaria spp	0	4	0	1	1	6
	0.0%	30.8%	0.0%	25.0%	50.0%	25.0%
Streptomyces spp	0	3	2	1	0	6
	0.0%	23.1%	50.0%	25.0%	0.0%	25.0%
Aspergillus spp	0	1	0	0	0	1
	0.0%	7.7%	0.0%	0.0%	0.0%	4.2%
Candida spp	1	1	0	1	1	4
	100.0%	7.7%	0.0%	25.0%	50.0%	16.7%
Microsporum canis	0	1	0	0	0	1
	0.0%	7.7%	0.0%	0.0%	0.0%	4.2%
Total	1	13	4	4	2	24
	4.2%	54.1%	16.7%	16.7%	8.3%	100.0%

Table (5) Total Percentage of Reference medical environments contaminated by various genera of fungi

Fungal genera isolated Count , %	Reference medical Pearson Chi Square Value= 12.8, Asymp. Sig. = 0 .23			Total
	Laboratory 1	Laboratory 2	Phlebotomy	
Penicillium spp	0 0.0%	1 100.0%	0 0.0%	1 11.1%
Alternaria spp	3 42.9%	0 0.0%	0 0.0%	3 33.3%
Streptomyces spp	1 14.3%	0 0.0%	0 0.0%	1 11.1%
Aspergillus spp	1 14.3%	0 0.0%	0 0.0%	1 11.1%
Candida spp	1 14.3%	0 0.0%	1 100.0%	2 22.2%
Sterilia mycelia spp	1 14.3%	0 0.0%	0 0.0%	1 11.1%
Total	7 77.8%	1 11.1%	1 11.1 %	9 100.0%

6- Total Percentage of metiga military hospital environments contaminated by various genera of fungi

Data in Table (6) showed that total Percentage of metiga military hospital environments contaminated by various genera of fungi , the most fungi in Examination room had (27.8%) Followed Intensive care unit had (22.2%) The third was Cardiac surgery (16.7%) And three sections recorded (11.1%) Laboratory , Orthopedics surgery and Queries Recorded The department in which no fungi have been recorded is Urology department The most isolated fungi of *Aspergillus spp* was repeated (38.9%) ,*Penicillium spp* was (33.3%), followed by *Alternaria spp* (16.7%) , *Streptomyces spp* and *Ulocladium spp* both (5.6%)

Table (6) Total Percentage of metiga military hospital environments contaminated by various genera of fung

Fungal genera isolated Count , %	metiga military hospital Pearson Chi Square Value= 16.7 , Asymp. Sig. = 0 ..6						Total
	Laboratory	Intensive care unit	Examination room	Queries	Cardiac surgery	Orthopedics surgery	
Penicillium spp	1 50.0%	1 25.0%	1 20.0%	0 0.0%	2 66.7%	1 50.0%	6 33.3%
Alternaria spp	0 0.0%	1 25.0%	1 20.0%	1 50.0%	0 0.0%	0 0.0%	3 16.7%
Streptomyces spp	0 0.0%	0 0.0%	0 0.0%	1 50.0%	0 0.0%	0 0.0%	1 5.6%
Aspergillus spp	1 50.0%	2 50.0%	2 40.0%	0 0.0%	1 33.3%	1 50.0%	7 38.9%
Ulocladium spp	0 0.0%	0 0.0%	1 20.0%	0 0.0%	0 0.0%	0 0.0%	1 5.6%
Total	2 11.1%	4 22.2%	5 27.8%	2 11.1%	3 16.7%	2 11.1%	18 100.0%

Results of Chi Square test from all table showed that there is no significant ,p-value resPectively greater than 0.05.

Discussion

Results of this study showed that *Penicillium spp* was the most common fungi recovered inside various public hospital in the city of Tripoli, the result are in agreement with [13] , the *Penicillium spp* w*as* (29.6%), *Alternaria spp*, *Streptomyces spp* (19,4%), the result are approximate with other studies [8] [21].

According to the results of this study, *Aspergillus spp* was repeated (15.3%), *Candida spp* (9.2%) disagreement with [12] and *Sterilia mycelia spp* (4,1%) , *Ulocladium spp* (2,0%) and *Microsporum canis* (1.0%).

Pencillium spp. a variety of diseases in which its etiologic significance is uncertain. It has been known to cause keratitis (inflammation of the cornea),

external ear, respiratory, and urinary tract infections, and endocarditis after insertion of valve prostheses. Disseminated disease has been reported in a patient with acute leukemia. Some strains produce toxins [15].

Alternaria spp.it is known to be allergenic and can cause hypersensitivity pneumonitis. It may also cause nasal and subcutaneous infections [22].

Aspergillus spp the pathogenicity of Members of the genus cause a group of diseases known as aspergillosis. The disease may be in the form of invasive infection, colonization, toxicoses, or allergy. Species of *Aspergillus* are opportunistic invaders, infecting various sites in individuals with lowered resistance due to underlying immunocompromising, debilitating disease and/or prolonged treatment with immunosuppressive drugs or antimicrobial agents [15]. *Candida spp* are important opportunistic pathogens because of their ability to infect seriously ill hospitalized patients Candida accounts for approximately 15% of all hospital-acquired infections and over 72% of all nosocomial fungal infections [15] Some *Streptomyces spp*. are considered nonpathogenic contaminants. Other species, such as *S.somaliensis*, cause mycetomas and occasionally other types of infections. *S. griseus* is the most commonly isolated species, but it only occasionally appears to be an etiologic agent of infection,*Ulocladium spp* very rarely involved In phaeohyphomycosis [15].*Sterilia mycelia* these fungi have been shown to cause mycetoma and phaeohyphomycosis [19].

A study in Tehran, Iran within two months conducted an internal fungal contamination was the results showed that the predominant fungal species are *Penicillium spp*, *Aspergillus spp*, *Cladosporium spp*, *Alternaria spp* .(70%) The average concentration of fungi reported in their study is therefore much more than that detected in this study [13]. In a study conducted to Fungi isolated from some hospitals and clincsins qasr bin ghashir area were repeated during the study period, the number of times the *Aspergillus spp* was obtained was 30 and this was the largest number obtained compared to other fungi isolated , and the total number of each fungus isolated from the public health centers under study, respectively was as follows. *Geotrichum spp* 22, *penicillium spp* 25, *Rhizoctonia spp* 19, *Alternaria spp* 16, *Rhizopus spp* 14, *Cladosporium spp* 5, *Saccharomyces spp* 17, *Candida spp* 21, *Mucor spp* 14 [12] so there is no agreement with this study for the following reasons (sampling period, number of samples, season, geographical location, environment, sterilization methods.) The results of the current study show different levels of pollution in all hospitals, such pollution may be caused or aggravated by a combination of factors, such as non-compliance with procedural standards (for example, frequent opening of doors between rooms and the external environment) and inefficient operation or insufficient maintenance of the air conditioning system, due to which unfiltered outside air can be allowed into the rooms. In general

Conclusions

The results showed that fungal percent were high and these conditions should be consideredas a risk factor for patients and other persons in the hospital

That the most isolated fungi are *Penicillium spp(*29.6%) , *Alternaria spp, Streptomyces spp (*19.4%).

Then medium isolated fungi are Aspergillus *spp (*15.3%), *Candida spp(* 9.2%).

and less isolated fungi are *Sterilia mycelia spp* (4.1%), *Ulocladium spp (*2.0%) *and Microsporum canis (*1.0%).

Recommendations

recommend through this research to conduct more research and studies related to Especially in indoor places such as companies, food factories, bakeries and hospitals in various municipalities. the importance of providing all equipment and materials needed for this research in order for the researcher to conduct such research.

Since exposure to airborne bacteria and fungi can be especially dangerous in hospitals and outpatient clinics, it is necessary to sterilize the air in such rooms.

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دراسة عزل الفطريات المحمولة جوا داخل المستشفيات العامة بطرابلس

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الملخص: الفطريات تتواجد عادة في البيئات الداخلية وتسبب العديد من الأمراض كان الهدف من الدراسة هو تقييم مستوى التلوث الفطري المحمول بالهواء في غرف المستشفيات المختلفة في المراكز التالية: مستشفى طرابلس الجامعي، عيادة السكري-طرابلس، معيتيقة العسكرية. مستشفى المختبر الطبي المرجعي-طرابلس، مستشفى الأمراض الجلدية البيرة أسطى ميلاد. تم إجراء ما مجموعه 100 عينة هواء من خمس بيئات في المستشفيات. من خلال الكشف عن 100 طبق بتري تحتوي على وسط سابورود دكستروز آجار، وتحديد أماكن عرض الأطباق في هده المستشفيات العامة ، في غرف الكشف العامة والطوارئ وغيرها، وذلك من خلال رفع الغطاء عن الأطباق لمدة 15 دقيقة. ، وبعدها تم وضع الأطباق في درجة حرارة الغرفة لمدة 72-120 ساعة، وتبين من خلال الفحص الافتراضي لهذه الأطباق وجود نمو كثيف يغطي الأطباق ، حيث أثبت الفحص المجهري أن الهواء الجوي يمكن اعتباره مستودعاً للجراثيم و الأبواغ الفطرية، ومن خلال النتائج التي تم الحصول عليها، تم عزل العديد من أجناس الفطريات (8 أجناس)، بما في ذلك الفطريات المسببة للأمراض الانتهازية مثل *Candida spp* ، والفطريات سريعة النمو والمنتجة للأبواغ مثل *Aspergillus spp* وغيرها، وتشمل الفطريات الأكثر عزلة الأجناس الأكثر فطر *Penicillium spp* (29.6%) ، *Alternaria spp* (19,4%)، *Streptomyces spp* (19,4%)، *Aspergillus spp* (15.3%)، *Candida spp* (9,2%) *Sterilia* ، *mycelia spp* (4,1%) ، *Ulocladium spp* (2,0%)و *Microsporum canis* (1,0%)

الكلمات المفتاحية: الفطريات المحمولة جواً، الفطريات المسببة للأمراض الانتهازية، مستودع الأبواغ الفطرية، البنسليوم، سابورود دكستروز أجار .