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### SUBJECT REVIEW

#### PATHOLOGICAL MICROORGANISM INFECTIONS (PARASITE AND FUNGI).

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#### **Abstract**

Microorganisms pathogenic that infect humans are widespread health problems, especially in tropical and semi-tropical zone, is no less important than other microscopic pathogens because it has the ability to infect most of the body's organs and lead to sometimes fatal complications that end in death, in addition to its ability to reproduce and in great numbers, which led to the failure to eliminate it completely, parasitic protozoa and helminthes intestinal are a large variety of parasites that live in the intestine, either this parasite is unsatisfactory or satisfactory symptoms causes and its vary in their resistance to the steroidal and macrophages, , Some fungi that cause fungal diseases are free to live, and the disease is caused by inhalation or the penetration of spores through the wounds and some are considered normal Flora of the human body such as Candida, which is harmless and harmful unless the body is weak immune, while some fungi cause diseases by producing toxins, this infection is dependent on the type and number of parasites in addition to the duration of infection, age, gender, and health habits have an important and prominent role in the spread of infection. Infection of intestinal parasites is not limited to the local infection of the digestive system, but rather to cause many pathological changes in the values of normal blood components (hematological changes), causing diseases in the other.

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#### **Introduction:-**

Intestinal parasites are widespread pathogens throughout the world, about 3.0 billion people develop intestinal parasites each year and the majority are children, Intestinal parasites are divided into two groups: parasitic protozoa and parasitic helminthes (Haque, 2007; Al-Shalah,2014; Al-abodi, 2018), Parasites are causes more than a billion of Disease cases lead to millions deaths yearaly (Al-abodi, 2019), and some of these infections are the cause of tropical diseases, such as leishmaniasis, lymphatic filariasis, malaria, helminthiasis trypanosomiasis, Chagas disease, schistosomiasis and onchocerciasis. the prevalence rates of parasitic infections are wide in tropical and semi-tropical areas, because of their prevalence climate conditions are suitable for the permanence and evolution of the stages in which these parasites pass through their life cycle such as temperature, humidity, soil nature and other environmental factors, the social and economic conditions also have a clear effect on the spread of intestinal parasites (Al-Abodi *et al.*, 2015; Ana *et al.*, 2018), there are a lot of disease in all body systems result of parasitic infection, such as Toxoplasmosis a contagious serious disease that spreads all over the world in human and animals (Al-Abodi, 2018; Al-abodi, 2017) , but in this article we scope only intestinal parasites.

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### **Risk factors associated with occurrence intestinal parasitic disease in human**

It has been observed that people in crowded places with a health and environmental system they are more likely to be infected than others, and the lack of municipal services or garbage disposal in an unhealthy way and the lack of adequate housing are among the causes of the spread of intestinal parasites (Al-Mayali and Al-abodi 2017; Al-abodi, 2018), children are often more susceptible to parasites in general and intestinal parasites in particular, due to many reasons including lack of health awareness and lack of hygiene, as well as decrease in immune response compared to adults (AL-Khalidy, 2016; Al-Ammash *et al.*, 2018).

Intestinal parasites are transmitted in several ways depending on the type of parasite, some of which are transmitted by mouth after ingestion (Cyst stages or Ova) through contaminated food or drink or contamination of hands with ovum of these parasites in the mouth such as *Entamoeba histolytica*., and may pass Infective stage, which represents the stage larval, in the case of oral-fecal transmission, they are transmitted from one person to another through the oral-fecal passage as in the migration of *Giardia lamblia* parasites and parasitic worm parasites the Giardia parasite is resistant to sterilizers such as chlorine, this is a reason for its transport through drinking water or recreational water resources such as swimming pools, which also play a role in parasite transmission (D'asheesh, 2016; AL-Khalidy, 2015; Shaker *et al.*, 2018), *Cryptosporidium parvum* does not differ significantly from the amoeba and Giardia parasites, as the transmission of parasite spores occurs through food and drink contaminated with feces containing the contagious stages of the parasite, the resistance of this parasite to chlorine also contributes to its transition (Bradley *et al.*,2015; Obada, 2015).

The process of transfer of infectious cysts from animal to human is very rare, although it is considered an animal, the source of infection, at the level of intestinal worms, the infection is transmitted through the infectious phase of the eggs, as in the case of the pinworm where the transfer occurs from one person to another after ingestion of these eggs,,and fingernails, hands, clothing and bedding are sources of transmission Pets such as cats, for example, carry eggs in their fur and thus contribute to the parasite transition (Al-abodi, 2018, Burkhart and Burkhart 2005). Since the eggs are very light, it can be carried by dust and therefore dust is a source of infection, and there are many forms of transmission of the infection to the rest of the other intestinal worms such as Ascaris worm, bovine tapeworms, Of intestinal worms (Burkhart and Burkhart 2005; Cook *et al.*, 2009).

Some fungi that cause fungal diseases are free to live, and the disease is caused by inhalation or the penetration of spores through the wounds and some are considered normal Flora of the human body such as *Candida*, which is harmless and harmful unless the body is weak immune (Prescott, *et.,al.* 2001) While some fungi cause diseases by producing toxins. Fungal infections are known to be chronic, as fungus grows slowly and regulates superficial, subcutaneous, systemic, and opportunistic infections (Tortora,*et.,al.*2002).

Most scientific studies are interested Diseases of fungus suggest that the inhalation of germs Fungi or parts of filaments fungus can cause Infection Poisoning depends on the type of fungus and the exposure period, As well as its impact on the health status of man Or animal. The responses to allergies (asthma, Nasal allergies, pneumonia is excessive Allergy) is considered one of the most important natural problems Commonly used for fungal inhalation. But in At the same time there are many scientific controversies between Doctors are allergic to personal injury Caused by toxic fungi. So this is The review article will discuss whether There are diseases caused by indoor fungi By reviewing? Indoor Molds Previous studies.( Bassam,2013; AL-Shaibani *et al.*, 2018)

Infection caused by fungus to humans often Concentrated on the skin or in the lungs, where they include Central nervous system infection Bone, Joint and Nervous System Lymphocytes but be categorically less common, while Or those tissues Which spread in any member they tend to occur more opportunistic as opportunistic opportunism In cases of suspected immunodeficiency. Infections Under these conditions infection can also occur Or Candidiasis infection Or fungal infection. Cryptococcosis Infection occurs aspergillosis ,also opportunistic in diabetes mellitus or alcoholics.( Bassam,2013; Al-abodi, 2018 )

The fungus has special ingredients that enable it to carry out a wide range of activities and events that interfere in all aspects of human life. The fungi are characterized by their ability to produce toxins of various kinds and the efficiency of their enzymatic system, which makes them a source of danger to humans directly through The treatment of the same fungi as in some types of allergies resulting from the inhalation of blackboards or indirectly inhalation of the intake of substances contaminated with fungal toxins(Jawetz.,*et.al.*1998; Al-abodi, 2017)

### The spread of Fungi in different Environments:

The fungus is spread in different environments, including air, Air fungi are spread by air currents in spores and fungus. Microorganisms, such as fungi, can enter buildings by entering outside air, heating, ventilation, air conditioning, doors and windows, as well as building materials and contaminants (Shelton et. al.2002), The pathogenic fungi were isolated from the air inside buildings such as classrooms and student clubs, including species belonging to species (*Penicillium*, *Alternaria*, *Aspergillus*, *Fusarium*, *Cladospora sp*, *Rhizopus stolonifer*, *Geotrichum candidum*) (Al-Zaidi and Khalidi,2016; Al-abodi, 2018) , As well isolated from different sources as Contaminated with water, soil, and various food sources such as meat, dairy products, grains and nuts Soil and various foodstuffs such as meat, dairy products, grains and nuts (Abdul-Karim & Hassan,2012 ; Ziadi,2016; Jamal,2008) .And isolation of several types of fungus accompanying the seeds of tomato and Okra are (*Aspergillus niger*, *Alternaria alternate*, *Fusarium solani*, *Fusarium oxysporum*, *Curvularia lunata*, *Penicillium notatum*) (Saadon & Saba.2016).

### Mycotoxins:

Fungi produce metabolic products called mycotoxin are secondary metabolites Produced by some genetically capable fungi Produce toxins when conditions are available Environmental and food suitable for the production of their toxins , mycotoxins are the strongest toxins Known to cause serious diseases with concentrations Slim up to less than 10 ppm The reason is that it is heat resistant To a degree that is difficult to destroy by transactions The traditional thermal used in operations Manufacturing and cooking are the second reason they spread Quickly from mushroom colonies to food So remove the infected parts from the mushroom The food does as many people do not lead To get rid of innate toxins In these foods and therefore should be avoided fungus growth on these foods. Fungi Responsible for the production of most important toxins are *Asperigillus*, *Fusarium*, *Penicillium* and *Alternaria* (Joseph,et.,al.2008 ; Baliukoniene,et.,al.2003). One fungus may produce more than one Currently there are more than 200 types of toxins Which cause human health risks The animal is the most famous (Aflatoxins ,Ochratoxins ,Fumonisin, ,Trichothecene ,Patulin, Rubratoxin ,Citricin, Zearalenones,Ergot) The effect of these toxins does not appear quickly But have a cumulative effect that appears after 10-20 A year of eating contaminated food and problem The other is that the immune system is not stimulated Body to be detected and not found Drug treatments to reduce their effect and thus form World health disaster (Hussein&Brasel,2001).

The fungus *Aspergillus ochraceus* is a fungus produced for aflatoxins and ochratoxins. It is characterized by its high ability to produce oxytoxin A more than other species (Council for Agricultural Science and Technology ,2003; Al-Khalidy et al., 2014) ,Experiment filtrate *A. ochraceus* effects in some tissues of rats laboratory of causing loss of hepatic architecture ,with congestion of central veins,also there is fibrous connective tissue formation. Also there is hyperplasia of bile ducts epithelium in the liver, as well as for the perfusion of water from the cells of the liver, leading to the dissolution of the cells to varying degrees, as well as the tissues of the lung infiltration of inflammatory cells,sever hemorrhage and congestion in the pulmonary tissue ,also there is thickening of interstitial tissue between alveoli.The bronchioles also affected , which characterized by desquamation and degeneration of epithelial cells which lining it , Also there is pulmonary,and kidney is dilation of renal convoluted tubules (Ziadi,2016).

### The development of fungi on culture media :

Cultivation of fungus on Nutrient media or culture media. These media vary according to the nature of the fungus and according to the purpose of planting it. The plant culture is defined as the nutritional environment suitable for the growth of microorganisms (bacteria and fungi), which obtains its food. This environment contains carbon and nitrogen And various salts may be added to some vitamins, either in the form of plant extracts or ready-made materials, as well as add some antibiotics to prevent the growth of bacteria and make room for the growth of fungi only or vice versa, such as: Cyclohexamide, Chloramphenicol, Ampecilline, Streptomycin. ( Willam ,et.al.,2003)

A culture media Commercially manufactured and used for the development of numerous fungi (CZapek Dox Agar ,Richards medium ,Corn Meal Agar , Malt Agar (MA) , Malt Extract Agar (MEA), Potato Dextrose Agar (PDA) , Sabouraud Dextrose Agar (SDA) and Potato Dextrose-Yeast Extract Agar (PDYA)) ( Willam ,et.al.,2003), The fungus is widespread in nature, so it is able to grow in environmental zones of a variety. As

Fungi is widespread in nature and has the potential to grow in different areas. Many fungi reproduce mainly through the formation of sporadic spores (conidial spores or spores Sporangiospores), which travel through the air to long distances allowing them to remain in different environments that are different from their original environments and

thus have the ability to adapt quickly to any particular environment in it, so they spread in all media, whether in soil, air or water. (Rocio,et.al.,2010)

For the purpose of studying the characteristics and characteristics of microorganisms, it is necessary to develop them in laboratories in suitable agricultural communities that contain the nutrients necessary for their growth. Therefore, the agro-food communities have diversified to suit each specific group according to their physiological needs. There are thousands of farming communities that differ in their chemical components and the growth of the neighborhoods also need to provide the appropriate conditions to grow well , The need for living cells for the nutrients necessary for growth depends on the chemical components present in these cells. Water accounts for 80% of the weight of living cells. It is considered to be one of the basic nutrients of living cells. There are many other important elements present in the structure of living cells such as carbon and oxygen Nitrogen, hydrogen, phosphorus, sulfur, potassium, etc., with different percentages of carbon. Carbon accounts for the largest percentage of dry cell weight (50%) followed by oxygen (20%) and so on sequentially. All microorganisms need the elements of potassium, magnesium, calcium, iron in large quantities. They also need manganese, cobalt and copper in very small amounts known as micronutrients and are obtained by positive ions in non-organic compounds (Annan *et.al.*, 2010; Al-Khalidy *et al.*, 2017).

And in the laboratory when those requirements are met The basic ones are despite the knowledge of 40 elements Food is important in feeding organisms only The components of the media on which these can grow Biology is relatively simple, such as water availability and source Carbon (energy) and nitrogen source Some nutrients note that organisms Especially microorganisms vary in their requirements, A source Carbon is an essential component of cells as it constitutes a percentage Up to 50% of the dry weight of some of these neighborhoods Such as fungi

In addition, it is possible to preparation a culture media for the development of fungi laboratory from the environment residues , the development of the biological resistance fungus *Trichoderma harizantum* on the culture media from tea leaves residues (Ziadi,2018; Kokaz *et al.*, 2018)

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