



CODEN [USA]: IAJPBB

ISSN : 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<https://zenodo.org/records/10427944><https://www.iajps.com/volumes/volume10-december-2023/37-issue-12-december-23/>Available online at: <http://www.iajps.com>

Research Article

THE EFFECT OF FUNGI ON HUMAN HEALTH

Abdulrahman.J.Alkhubrani¹, Rahaf.A.Alzaidi², Nadin.G.Albarakati³,
Maisam.A.Jastaniah⁴, Mahammad.Y.Wazzan⁵, Saleh.E.Almalki⁶, Faisal.A.Alghamdi⁷,
Fouad.K.Qudus⁸, Shatha.A.Abdulgader⁹, Malak.H.Alharbi¹⁰, Lamees.A.Aldossary¹¹,
Brican.F.Alotaibi¹², Ahmed.M.Asiri¹³, Khalifa.S.Bursais¹⁴.Ashwaq.T.Hakim¹⁵,
Abrar.S.Alqhtani¹⁶, Abdullah.A.Alzahrani¹⁷, Mahdi.J.Alharthi¹⁸, Nasser.Y.Alshubruqi¹⁹

Laboratory specialist at the Regional Laboratory in Mecca¹Specialist histopathology in King Faisal Hospital²Laboratory medicine specialist at King Faisal Hospital³Laboratory specialist at King Faisal Hospital⁴Laboratory specialist at King Abdulaziz university Hospital⁵Laboratory technician at King Faisal Hospital⁶Laboratory medicine technician at King Faisal Hospital⁷Laboratory specialist at King Faisal Hospital in Mecca⁸Laboratory specialist at the Regional Laboratory in Holy city⁹Laboratory technician in health affairs in the eastern region¹⁰Laboratory specialist in health affairs in the eastern region¹¹Laboratory specialist in health affairs in the eastern region¹²Medical laboratory in Ahad Rufaida general Hospital¹³Laboratory technician in health affairs in the eastern region¹⁴Laboratory specialist at the regional laboratory in Mecca¹⁵Laboratory specialist at the regional laboratory in Mecca¹⁶Laboratory specialist at King Fahad general Hospital in Al-Baha¹⁷Laboratory technician at the directorate of health affairs in Bisha¹⁸Laboratory technician at Prince Sultan Military Medical City¹⁹

Abstract:

The aim of the study is, the importance of fungi on human health, the effect of fungi on people, what types of fungi infect humans. A questionnaire was created and designed via Google Drive and distributed on the social media network (WhatsApp) to health practitioners and practices in Mecca 800 questionnaires were distributed and responses were obtained to 750 questionnaires from the targeted targets (Residents of Makkah aged 25-60 years).

Keywords: effect, fungi, human health

Corresponding author:**Abdulrahman.J.Alkhubrani,***Laboratory specialist at the Regional Laboratory in Mecca*

Please cite this article in press Abdulrahman.J.Alkhubrani *et al.*, *The Effect Of Fungi On Human Health, Indo Am. J. P. Sci, 2023; 10 (12).*

1-INTRODUCTION:

Mycology is a section of biology attention with the systematic study of fungi, containing their genetic and biochemical properties, classification, and use in humans as a resource of medicines, foodstuffs, and psychotropic substances used for religious objective, as well as their risks such as poisoning or contamination. The field of botany and the study of plant illness is also closely related to mycology because fungi are the major reason of many plant diseases ⁽¹⁾. The kingdom of fungi is the kingdom of microscopic organisms, single-celled, multicellular, and multiple organisms. It is described by a specific way of reproduction, as the concept of gender does not apply to it, but the shape or size of gametes is the product of males and females. Because fungi make female and male gametes, but fertilization takes place between two various species of the same species, and this gives diversity to the fungi. Fungi are multicellular organisms, and we rarely find unicellular fungi. Among the most familiar unicellular fungi, we find yeast, in addition to most of the fungi of the Endomycetales section, which are all members of the Ascomycetes. Fungal cells include almost all the organelles that characterize the cells of eukaryotic organisms, as we find the Golgi apparatus, vacuoles, the endoplasmic reticulum, as well as mitochondria and most other parts. The fungal cell, compared to the plant cell, does not include plant starch (starch), but it does contain animal starch (glycogen). Fungal cells, like their plant counterparts, are characterized by containing a cell wall collected mainly of chitin, which is the basic material in the composition of the cell walls of true fungi. The significance of the cell wall in fungi comes from it being a barrier between the external environment and the internal ingredients of the fungus, as the fungus is linked to the environmental environment in its entirety, and the presence of the wall here is the necessary preservation that the fungus resorts to, in addition to the fact that the cell wall acts as a regulator for the entry of large molecules. All fungi are heterotrophic because they do not include chlorophyll pigments: Obligate parasitic fungi: they live in nature parasitizing on special hosts that wear them, and they cannot live apart from their hosts, such

as the fungus *Plasmopara viticola*. Facultatively parasitic fungi: they live in natural conditions, thriving on decomposed organic materials found in the soil. If these materials are not found, a host is found. Appropriately, they can parasitize it, such as some species of *Fusarium*. Obligate saprophytic fungi: saprophytes live on decaying organic materials, whether plant or animal remains, such as the *Penicillium* fungus. Facultatively sprouting fungi: They usually live as parasites, but if they do not find a convenient host, they recourse to sprouting on decomposed organic materials in the soil. Symbiotic fungi: they live in symbiosis, that is, exchanging benefits with other living organisms, such as lichens, and they are symbiotic living between types of fungi. Nematodes and kinds of green algae or cyanobacteria, as well as mycorrhizae (mycorrhizal fungi), which is a collaborative connection between some sort of soil fungi and the origins of certain plants ⁽²⁾⁽³⁾. Fungi collapse organic materials into specimen products that can be cleared by plants, and thus they can break down some carbon materials, such as: 1-Plastic. 2- Some kinds of fungi are used as food initially: such as: Truffle, mushroom, Argon, Mushrooms, Mushroom, 3- It helps in making bread and some medicines that contain vitamin B. They are currently used in advanced engineering applications. 4- *Penicillium* mushrooms have medicinal importance as they are used: The chemistry called penicillin was produced. Manufacture of some types of cheese. 5- Some of it is used in the manufacture of some medicines, such as cortisone. It causes sickness in humans, such as skin illness such as: Athlete's foot (between the toes) is rise by *Mycobacterium vulgaris*. Ringworm disease Middle ear infections. 2- They cause diseases in animals: such as (some fungi that infect ants). 3- It reason diseases in plants: such as late blight in potatoes and tomatoes, caused by the oomycete fungus *Phytophthora infestans*. Wheat rust, A disease affecting corn. A wilt disease that affects cotton and tomatoes. Caused by: some parasitic genera of *Fusarium*. Early blight disease affecting tomatoes and potatoes. Cotton leaf spot disease. Caused by: some parasitic *Alternaria* genera. Cupcake wilt is a disease that affects about 300 species, including tomatoes,

eggplant, cotton, and olives. In nature, fungi exist in symbiotic relationships with such diverse species as plants and algae, to form mycorrhizae and lichens, respectively. Fungi often reside in compound communities composed of multiple cell types, with biofilms as a predominant life form ⁽⁴⁾. Fungi are important members of diverse microbiota and promote ecosystem homeostasis through interactions with bacteria in lungs, guts, soil, stems, and other environments ⁽⁵⁻⁷⁾. Although fungi are generally considered auxotrophic, they can also harvest electromagnetic radiation for growth, which implies some autotrophic capacity ⁽⁸⁻¹⁰⁾. Fungi are highly resilient and capable of successfully occupying extreme environments. For example, the damaged radioactive reactor at Chernobyl hosts dozens of melanotic fungal species, despite high radiation fluxes ⁽¹¹⁾, and the Antarctic fungus *Cryomyces antarcticus* has been revealed to survive under space station simulated Mars conditions ⁽¹²⁾. Fungi hold the record for growth at elevated temperature among eukaryotic organisms; *Aspergillus fumigatus*, the main human lung allergen and pathogen, is able to grow at temperatures up to 70°C and remains viable down to 20°C ^(13, 14). As illustrated by these examples, fungal species manifest astounding diversity, resilience, and variability with regard to the environments they take and their associations with other organisms.

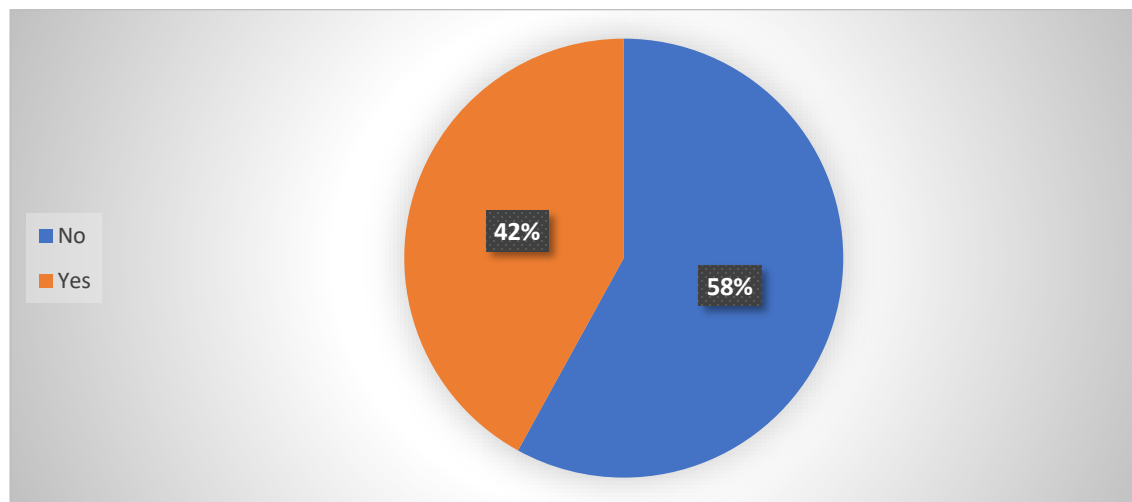
2-MATERIAL AND METHODS:

The is begun in (the holy city of Mecca in Saudi Arabia), writing the research and then recording the questionnaire in June 2023, and the study ended with data collection in October 2023. The researcher used the descriptive analytical approach that uses a quantitative or qualitative description of the social phenomenon (The effect of fungi on human health). This kind of study is characterized by analysis, reason, objectivity, and reality, as it is concerned with individuals and societies, as it studies the variables and their effects on the health of the individual, society, and consumer, the spread of diseases and their relationship to demographic variables such as age, gender, nationality, and marital status. Status, occupation ⁽¹⁵⁾, And use the Excel 2010 Office suite histogram to arrange the results using: Frequency tables Percentages ⁽¹⁶⁾. A questionnaire is a remarkable

and helpful tool for collecting a huge amount of data, however, researchers were not able to personally interview participants on the online survey, due to social distancing regulations at the time to prevent infection between participants and researchers and vice versa (not coronavirus participation completely disappearing from society). He only answered the questionnaire electronically, because the questionnaire consisted of eight questions, all were closed, The online approach has also been used to generate valid samples in similar studies in Saudi Arabia and elsewhere ⁽¹⁷⁾.

3- RESULTS AND DISCUSSION:

The percentage of those who agreed to participate in the research questionnaire (the effect of fungi on human health) was 100%, and as for their ages, they were as follows: 25-34 years, with 35-44 years the same percentage at 28%, while the percentage of those aged 45-54 26%, 18% of those aged 55-60 years. As for the gender of the participants, it was equal, with the percentage of males and females being 50%. As for their nationalities, the percentage of Saudis was 96%, and non-Saudis were 4%. In terms of their professions, they were as follows: student 6%, careerist 18%, government employee 56%, private sector employee 2%, freelancer 18%. In terms of their education, it was as follows: primary 0%, intermediate 0%, secondary 8%, university 74%, master's 12%, doctorate 6%. As for the research questionnaire questions, their responses were as follows: The first question is: What do fungi do in the human body? 1- Itching 2- Pain 3- Skin irritation 3- Hair loss? Yes 98% and no 2%. The second question is: Do fungi cause cancer? Yes 42% and No 58%. The third question: Do fungi contain the carcinogen Afltoxin? 52.1% and 47.9%. The fourth question: Are fungi contagious? Yes 90% and no 10%. The fifth question: Is the fungus transmitted from the wife to the husband? Yes 86% and no 14%. The sixth question: Can fungal infections spread throughout the body, including vital organs? Yes 90% and no 10%. The seventh question: What are the types of fungi that infect humans? 1- Candida 2- Thrush 3- Yeast infection 4- Perse and manum ringworm? Yes 91.8% and no 8.2%. The eighth question: Are fungi considered to have positives as well as negatives? Yes 72% and no 28%. (figure No.1)

Figure No.1: Opinions and attitudes of research participants regarding the impact of fungi on human health**4-CONCLUSION:**

We conclude from this study that, Just as fungi have a positive role in human life, we find that they have negative effects, in that they cause fungal infections and serious skin diseases, as they contain the carcinogen aflatoxin.

ACKNOWLEDGMENT:

To start with, I would like to Praise God and thank Dr. Anas S. Dablood, from Umm Al-Qura University (Public Health Department, Faculty of Health Sciences Al-leeth), Mecca, Saudi Arabia. And the researchers who make the project come to light.

REFERENCES:

- 1- peñalva MA, Arst HN (September 2002). "Regulation of gene expression by ambient pH in filamentous fungi and yeasts". *Microbiology and Molecular Biology Reviews*. C. 66 p. 3: 426–46, table of contents. DOI:10.1128/MMBR.66.3.426-446.2002. PMC:120796. PMID:12208998.
- 2- Dr. Hassouni Jadoua Abdullah, Dr. Saba Riyad Khudair, Ashraf Sami Hassan, *Environment, Animal and Plant Environment and Microbiology*, Dar Degla Amman, 2015, p. 260.
- 3- Amer Abdel Fattah Al-Kilani, *Natural Encyclopedia*, Amman, 2014, p. 189.
- 4- Lagree K, Mitchell AP. 2017. Fungal biofilms: inside out. *Microbiol Spectr* 5(2):FU-0045-2016.NK-0024-2016. https://doi.org/10.1128/microbiolspec_FUNK-0024-2016
- 5- El-Jurdi N, Ghannoum MA. 2017. The mycobiome: impact on health and disease states. *Microbiol Spectr* 5(3):FUNK-0045-2016. <https://doi.org/10.1128/microbiolspec.FUNK-0045-2016>
- 6- Peay KG, Kennedy PG, Talbot JM. 2016. Dimensions of biodiversity in the Earth mycobiome. *Nat Rev Microbiol* 14:434 – 447. <https://doi.org/10.1038/nrmicro.2016.59>
- 7- Peleg AY, Hogan DA, Mylonakis E. 2010. Medically important bacterial fungal interactions. *Nat Rev Microbiol* 8:340 –349. <https://doi.org/10.1038/nrmicro2313>.
- 8- Dadachova E, Bryan RA, Huang X, Moadel T, Schweitzer AD, Aisen P, Nosanchuk JD, Casadevall A. 2007. Ionizing radiation changes the electronic properties of melanin and enhances the growth of melanized fungi. *PLoS One* 2:e457. <https://doi.org/10.1371/journal.pone.0000457>
- 9- Karpenko YV, Redchitz TI, Zheltonozhsky VA, Dighton J, Zhdanova NN. 2006. Comparative responses of microscopic fungi to ionizing radiation and light. *Folia Microbiol (Praha)* 51:45– 49. <https://doi.org/10.1007/bf02931449>
- 10- Robertson KL, Mostaghim A, Cuomo CA, Soto CM, Lebedev N, Bailey RF, Wang Z. 2012. Adaptation of the black yeast *Wangiella dermatitidis* to ionizing radiation: molecular and cellular mechanisms. *PLoS One* 7:e48674. <https://doi.org/10.1371/journal.pone.0048674>
- 11- Dighton J, Tugay T, Zhdanova N. 2008. Fungi and ionizing radiation from radionuclides. *FEMS Microbiol Lett* 281:109 –120. <https://doi.org/10.1111/j.1574-6968.2008.01076.x>
- 12- Onofri S, de Vera J-P, Zucconi L, Selbmann L, Scalzi G, Venkateswaran KJ, Rabbow E, de la Torre R, Horneck G. 2015. Survival of Antarctic cryptoendolithic fungi in simulated Martian

- conditions on board the International Space Station. *Astrobiology* 15:1052–1059. <https://doi.org/10.1089/ast.2015.1324>
- 13- Tansey MR, Brock TD. 1972. The upper temperature limit for eukaryotic organisms. *Proc Natl Acad SciUSA* 69:2426 –2428. <https://doi.org/10.1073/pnas.69.9.2426>.
 - 14- Paulussen C, Hallsworth JE, Álvarez-Pérez S, Nierman WC, Hamill PG, Blain D, Rediers H, Lievens B. 2017. Ecology of aspergillosis: insights into the pathogenic potency of *Aspergillus fumigatus* and some other *Aspergillus* species. *Microb Biotechnol* 10:296 –322. <https://doi.org/10.1111/1751-7915.12367>.
 - 15- Alserahy, Hassan Awad, et al (2008), *The thinking and scientific research*, Scientific Publishing Center, King Abdul-Aziz University in Jeddah, the first edition
 - 16- Al Zoghbi, Muhammad and AlTalvah, Abas (2000), *Statistical system understanding and analysis of statistical data*, first edition, Jordon-Amman
 - 17-. Kadasah, N.A.; Chirwa, G.C.; et al. Knowledge, Attitude, and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Front. Public Health* 2020, 8, 217.