

Table 1. Filamentous fungi species and mycotoxins produced.

Fungal Genera	Mycotoxins Produced
Aspergillus	
A. carneus	Citrinin
A. clavatus	Cytochlasin E, Patulin, Tryptoquivalene
A. flavus	Aflatoxins, Sterigmatocystin
A. fumigatus	Fumagilin, Gliotoxin, Verruculogen, viriditoxin
A. nidulans	Sterigmatocystin
A. niger	Malformin, Oxalic acid, Ochratoxin A
A. ochraceus	Ochratoxin A, Penicillinic acid, Destruxin
A. terreus	Citrinin, Citreoviridin
A. ustus	Austdiol, Austamide, Austocystin
A. versicolor	Cyclopiazonic acid, Sterigmatocystin
A. parasiticus	Aflatoxins
Fusarium	
F. avenaceum	Enniatins, Fructagenin +1, HT-2 toxin, Ipomeanine, Lateritin +1, Lycomerasmin +1, Moniliformin, Monoacetoxyscirpenol, Neosolaniol, Nivalenol, Sambucynin
F. culmorum	Deoxynivalenol, Fructagenin +1, HT-2 toxin, Ipomeanine, Lateritin +1, Lycomerasmin +1, Moniliformin, Neosolaniol
F. equiseti	Moniliformin, Nivalenol, Monoacetoxyscirpenol, Acetoxyscirpenediol, Acetyldeoxynivalenol, Acetylneosolaniol, Acetyl T-2 toxin, Avenacein +1, Beauvericin +2, Butenolide, Calonectrin, Deacetylcalonectrin, T-1 toxin, zearalenol, T-1 toxin, T-2 toxin

Table 1. Cont.

Fungal Genera	Mycotoxins Produced
F. nivale	Deoxynivalenol diacetate, HT-2 toxin, Ipomeanine, Lateritin +1, Lycomerasmin +1, Moniliformin, Monoacetoxyscirpenol, Sambucynin
F. oxysporum	Moniliformin, Monoacetoxyscirpenol, Neosolaniol, Nivalenol, Acetoxyscirpenediol, Acetyldeoxynivalenol, Acetylneosolaniol, Acetyl T-2 toxin, Avenacein +1, Beauvericin +2, Butenolide, Calonectrin, Deacetylcalonectrin, zearalenone
F. roseum	Fructagenin +1, Moniliformin, Monoacetoxyscirpenol, Neosolaniol, NT-1 toxin, N-2 toxin
F. solani	Enniatins, T-1 toxin, T-2 toxin, Sambucynin, Scirpentriol
F. verticillioides	Fumonisin, Monoacetoxyscirpenol, Neosolaniol, Ipomeanine, Avenacein +1, Beauvericin +2, Fusaric acid, Fusarin
F. graminearum	Zearalenone, Yavanicin +1
Penicillium	
P. viridicatum	Ochratoxin A, Rubrosulphin, Viopurpurin, Viomellein
P. citrinin	Citrinin
P. verrucosum	Citrinin
P. hirsutum	Citrinin
P. citreoviride	Citreoviridin
P. islandicum	Islanditoxin
P. expansum	Patulin
P. roqueforti	Patulin
P. griseofulvum	Patulin
P. claviforme	Patulin
P. crustosum	Penitrem, Viomellein
P. rubrum	Rubratoxin
P. brunneum	Rugulosin P.
kloeckeri	Rugulosin
P. rugulosum	Sterigmatocystin, Rugulosin
P. aurantiogriseum	Viomellein

Table 2. Common mycotoxins, their health effects and target organs.

Mycotoxins	Health Effects	Target Organs
Aflatoxins	Hepatotoxic and immune-suppressive	Liver
Ochratoxin A	Carcinogenic, teratogenic, Immuno-suppressive, nephrotoxic and causing upper urinary tract disease	Kidney, liver
Fumonisin	Carcinogenic, hepatotoxic, nephrotoxic, immunosuppressive	Gastro-intestinal tract (GIT), liver, kidney
Deoxynivalenol	Nausea, vomiting, diarrhea, reproductive effects and toxicosis	Reproductive organs, GI
T-2 toxin	Hepatotoxic, genotoxic and immune-suppressive	GIT, Immune system
Zearalenone	Carcinogenic, hormonal imbalance and reproductive effects	Reproductive organs
Nivalenol	Anorexic, immunotoxic, haematotoxic and genotoxic	GIT, immune system
Sterigmatocystin	Genotoxic, cytotoxic, immunotoxic and carcinogenic	Liver, immune system, kidney
Cyclopiazonic acid	Immunotoxic and hepatotoxic	Muscle, hepatic tissue and spleen
Moniliformin	Cardiotoxic, muscular disorders, immunotoxic	Heart, Kidney, and muscles
Enniatins	Immunotoxic, cytotoxic	Immune system
Gliotoxin	Immunotoxic, nephrotoxic, hepatotoxic and genotoxic	Kidney, liver, immune system
Citreoviridin	Teratogenic and immunotoxic	Not specific
Citrinin	Nephrotoxic	Kidney

Table 3. Infections induced by fungi species and organs they target.

Fungi Species	Target Organs	Diseases Induced
Aspergillus candidus	Respiratory tract, brain, ear and nails	Respiratory disease, otomycosis, onychomycosis, brain granuloma
Aspergillus flavus	Nails, respiratory tract, bone and eye	Sinusitis, keratitis, aspergillosis, osteomyelitis
Aspergillus fumigatus	Respiratory tract	Pulmonary infections
Aspergillus niger	Ears, throat and respiratory tract	Otomycosis, pulmonary aspergillosis
Aspergillus versicolor	Nose, eyes, throat, nails	Invasive aspergillosis, onychomycosis
Fusarium oxysporum	Eyes and Nails	Keratitis, onychomycosis
Fusarium solani	Eyes, respiratory tract, nails, skin and bone	Keratitis, sinusitis, endophthalmitis, onychomycosis, cutaneous infections, mycetoma and arthritis
Fusarium verticillioides	Eyes, skin, internal organs such as lungs, etc.	Keratomycosis, skin lesions, proliferation of internal organs
Penicillium citrinum	Eyes and respiratory tract	Keratitis, asthma, pneumonia
Penicillium mameffei	Blood, skin and respiratory tract	Fungemia, skin lesions, anaemia

References

1. Ahmadi, B.; Hashemi, S.J.; Zaini, F.; Shidfar, M.R.; Moazeni, M.; Mousavi, B.; Noorbakhsh, F.; Gheramishoar, M.; Hossein Pour, L.; Rezaie, S. A case of onychomycosis caused by *Aspergillus candidus*. *Med. Mycol. Case Rep.* **2012**, *1*, 45–48. [[CrossRef](#)] [[PubMed](#)]
2. Deshpande, S.D.; Koppikar, G.V. A study of mycotic keratitis in Mumbai. *Indian J. Pathol. Microbiol.* **1999**, *42*, 81–87. [[PubMed](#)]
3. Georgiadou, S.P.; Kontoyiannis, D.P. Concurrent lung infections in patients with hematological malignancies and invasive pulmonary aspergillosis: How firm is the *Aspergillus* diagnosis? *J. Infect.* **2012**, *65*, 262–268. [[CrossRef](#)] [[PubMed](#)]
4. Gugnani, H.C.; Talwar, R.S.; Njoku-Obi, A.N.U.; Kodilinye, H.C. Mycotic keratitis in Nigeria: A study of 21 cases. *Br. J. Ophthalmol.* **1976**, *60*, 607–613. [[CrossRef](#)]
5. Howard, D.H. *Pathogenic Fungi in Humans and Animals*, 1st ed.; Marcel Dekker Inc.: New York, NY, USA, 2002; pp. 422–424.
6. More, T.T.; Yan, S.; Tyagi, R.D.; Surampalli, R.Y. Potential use of filamentous fungi for wastewater sludge treatment. *Bioresour. Technol.* **2010**, *101*, 7691–7700. [[CrossRef](#)] [[PubMed](#)]
7. Hageskal, G.; Lima, N.; Skaar, I. The study of fungi in drinking water. *Mycol. Res.* **2009**, *113*, 165–172. [[CrossRef](#)] [[PubMed](#)]
8. Pitt, J.I.; Hocking, A.D. Primary keys and miscellaneous fungi. In *Fungi and Food Spoilage*, 2nd ed.; Blackie Academic and Professional: London, UK; Weinheim, Germany; New York, NY, USA; Tokyo, Japan; Melbourne, Australia; Madras, India, 1997; pp. 59–171.
9. Klich, M.A. Introduction; economic and medical importance of *Aspergillus*. In *Identification of Common Aspergillus Species*; Centraalbureau voor Schimmelcultuur: Utrecht, The Netherlands, 2002; pp. 1–16.
10. Laich, F.; Fierro, F.; Marti'n, J.F. Production of Penicillin by fungi growing on food products: Identification of a complete Penicillin gene cluster in *Penicillium griseofulvum* and a truncated cluster in *Penicillium verrucosum*. *Appl. Environ. Microbiol.* **2002**, *68*, 1211–1219. [[CrossRef](#)] [[PubMed](#)]
11. Jahromi, M.F.; Liang, J.B.; Ho, Y.W.; Mohamad, R.; Goh, Y.M.; Shokryazdan, P. Lovastatin Production by *Aspergillus terreus* Using Agro-Biomass as Substrate in Solid State Fermentation. *J. Biomed. Biotechnol.* **2012**, *11*, 11–22.
12. Person, A.K.; Chudgar, S.M.; Norton, B.L.; Tong, B.C.; Stout, J.E. *Aspergillus niger*: An unusual cause of invasive pulmonary aspergillosis. *J. Med. Microbiol.* **2010**, *59*, 834–838. [[CrossRef](#)] [[PubMed](#)]
13. Walsh, T.J.; Groll, A.; Hiemenz, J.; Fleming, R.; Roilides, E.; Anaissie, E. Infections due to emerging and uncommon medically important fungal pathogens. *Clin. Microbiol. Infect.* **2004**, *10*, 48–66. [[CrossRef](#)] [[PubMed](#)]
14. Hedayati, M.T.; Pasqualotto, A.C.; Warn, P.A.; Bowyer, P.; Denning, D.W. *Aspergillus flavus*: Human pathogen, allergen and mycotoxin producer. *Microbiology* **2007**, *153*, 1677–1692. [[CrossRef](#)] [[PubMed](#)]
15. Vonberg, R.P.; Gastmeier, P. Nosocomial aspergillosis in outbreak settings. *J. Hosp. Infect.* **2006**, *63*, 246–254. [[CrossRef](#)] [[PubMed](#)]

16. Jain, P.K.; Gupta, V.K.; Misra, A.K.; Gaur, R.; Bajpai, V.; Issar, S. Current status of Fusarium infection in human and animal. *Asain J. Anim. Vet. Adv.* **2011**, *6*, 201–227. [[CrossRef](#)]
17. Oshikata, C.; Tsurikisawa, N.; Saito, A.; Watanabe, M.; Kamata, Y.; Tanaka, M.; Tsuburai, T.; Mitomi, H.; Takatori, K.; Yasueda, H.; et al. Fatal pneumonia caused by *Penicillium digitatum*. *BMC Pulm. Med.* **2013**, *13*, 16. [[CrossRef](#)] [[PubMed](#)]
18. Kuiper-Goodman, T. Prevention of human mycotoxicosis through risk assessment and risk management. In *Mycotoxins in Grain*; Miller, J.D., Trenholm, H.L., Eds.; Eagan Press: St. Paul, MN, USA, 1994; pp. 439–470.
19. D’Mello, J.P.F.; Macdonald, A.M.C. Mycotoxins. *Anim. Feed Sci. Technol.* **1997**, *69*, 155–166. [[CrossRef](#)]
20. Brown, D.W.; Butchko, R.A.E.; Baker, S.E.; Proctor, R.H. Phylogenomic and functional domain analysis of polyketide synthases in *Fusarium*. *Fungal Biol.* **2012**, *116*, 318–331. [[CrossRef](#)] [[PubMed](#)]
21. Richard, J.L. Some major mycotoxins and their mycotoxicoses—An overview. *Int. J. Food Microbiol.* **2007**, *119*, 3–10. [[CrossRef](#)] [[PubMed](#)]
22. Dutton, M.F. Fumonisin, mycotoxins of increasing importance: Their nature and their effects. *Pharmacol. Ther.* **1996**, *70*, 137–161. [[CrossRef](#)]
23. Grollman, P.A.; Jelakovic, B. Role of environmental toxins in endemic (Balkan) nephropathy. *J. Am. Soc. Nephrol.* **2007**, *18*, 2817–2823. [[CrossRef](#)] [[PubMed](#)]
24. Bennett, J.W.; Klich, M. Mycotoxins. *Clin. Microbiol. Rev.* **2003**, *16*, 497–516. [[CrossRef](#)] [[PubMed](#)]
25. Hussein, H.S.; Brasel, J.M. Toxicity, metabolism, and impact of mycotoxins on humans and animals. *Toxicology* **2001**, *167*, 101–134. [[CrossRef](#)]
26. Sweeney, M.J.; Dobson, A.D. Mycotoxin production by *Aspergillus*, *Fusarium* and *Penicillium* species. *Int. J. Food Microbiol.* **1998**, *43*, 141–158. [[CrossRef](#)]
27. Lillards-Roberts, S. Mycotoxin list. *Bol. Cient.* **2011**, *46*, 1–7.
28. Barkai-Golan, R. Chapter 6-*Aspergillus* Mycotoxins. In *Mycotoxins in Fruits and Vegetables*; Rivka, B.-G., Nachman, P., Eds.; Academic Press: San Diego, CA, USA, 2008; pp. 115–151.
29. Steyn, P.S. Mycotoxins, general view, chemistry and structure. *Toxicol. Lett.* **1995**, *82–83*, 843–851. [[CrossRef](#)]
30. Prelusky, D.B.; Rotter, B.A.; Rotter, R.G. Toxicology of mycotoxins. In *Mycotoxins in Grain*; Miller, J.D., Trenholm, H.L., Eds.; Eagan Press: St. Paul, MN, USA, 1994; pp. 359–404.
31. International Agency for Research on Cancer (IARC). IARC Traditional Herbal Medicines, Some Mycotoxins, Naphthalene and Styrene. Monographs on the Evaluation of Carcinogenic Risks to Humans; International Agency for Research on Cancer (IARC): Lyon, France, 2002; pp. 82–171.
32. International Agency for Research on Cancer (IARC). RE: Some Naturally Occurring Substances: Food Items and Constituents, Heterocyclic Aromatic Amines and Mycotoxins; International Agency for Research on Cancer (IARC): Lyon, France, 1993.
33. Stoev, S.D. The role of ochratoxin A as a possible cause of Balkan Endemic Nephropathy and its risk evaluation. *J. Vet. Hum. Toxicol.* **1998**, *40*, 352–360.
34. Kumar, V.; Basu, M.S.; Rajendran, T.P. Mycotoxin research and mycoflora in some commercially important agricultural commodities. *Crop Protect.* **2008**, *27*, 891–905. [[CrossRef](#)]
35. International Agency for Research on Cancer (IARC). RE: Ochratoxin A. Monographs on the Evaluation of Carcinogenic Risks to Humans; International Agency for Research on Cancer (IARC): Lyon, France, 1993.
36. International Agency for Research on Cancer (IARC) Aflatoxins. IARC Monographs on Chemical Agents and Related Occupations; International Agency for Research on Cancer (IARC) Aflatoxins: Lyon, France, 2012; Volume 100F, pp. 225–248.
37. Creppy, E.E.; Chiarappa, P.; Baudrimont, I.; Borracci, P.; Moukha, S.; Carratù, M.R. Synergistic effects of fumonisin B1 and ochratoxin A: Are in vitro cytotoxicity data predictive of in vivo acute toxicity? *Toxicology* **2004**, *201*, 115–123. [[CrossRef](#)] [[PubMed](#)]
38. Hope, J.H.; Hope, B.E. A Review of the Diagnosis and Treatment of Ochratoxin A Inhalational Exposure Associated with Human Illness and Kidney Disease including Focal Segmental Glomerulosclerosis. *J. Environ. Public Health* **2012**, *2012*, 10. [[CrossRef](#)] [[PubMed](#)]
39. Sorrenti, V.; Di Giacomo, C.; Acquaviva, R.; Barbagallo, I.; Bognanno, M.; Galvano, F. Toxicity of Ochratoxin A and Its Modulation by Antioxidants: A Review. *Toxins* **2013**, *5*, 1742–1766. [[CrossRef](#)] [[PubMed](#)]
40. Zhu, L.; Yu, T.; Qi, X.; Gao, J.; Huang, K.; He, X.; Luo, H.; Xu, W. Limited Link between Oxidative Stress and Ochratoxin A—Induced Renal Injury in an Acute Toxicity Rat Model. *Toxins* **2016**, *8*, 373. [[CrossRef](#)] [[PubMed](#)]

41. Chu, F.S.; Li, G.Y. Simultaneous occurrence of fumonisin B1 and other mycotoxins in moldy corn collected from the People's Republic of China in regions with high incidence of esophageal cancer. *Appl. Environ. Microbiol.* **1994**, *60*, 847–852. [[PubMed](#)]
42. Marasas, W.F.O.; Kellerman, T.S.; Gelderblom, W.C.; Coetzer, J.A.; Thiel, P.G.; van der Lugt, J.J. Leukoencephalomalacia in a horse induced by fumonisin B1 isolated from *Fusarium moniliforme*. *J. Vet. Res.* **1988**, *55*, 197–203.
43. Soriano, J.M.; Dragacci, S. Occurrence of fumonisins in foods. *Food Res. Int.* **2004**, *37*, 985–1000. [[CrossRef](#)]
44. Hymery, N.; Léon, K.; Carpentier, F.G.; Jung, J.L.; Parent-Massin, D. T-2 toxin inhibits the differentiation of human monocytes into dendritic cells and macrophages. *Toxicol. In Vitro* **2009**, *23*, 509–519. [[CrossRef](#)] [[PubMed](#)]
45. Li, M.; Harkema, J.R.; Islam, Z.; Cuff, C.F.; Pestka, J.J. T-2 toxin impairs murine immune response to respiratory reovirus and exacerbates viral bronchiolitis. *Toxicol. Appl. Pharmacol.* **2006**, *217*, 76–85. [[CrossRef](#)] [[PubMed](#)]
46. Miller, J.D.; Trenholm, H.L. *Mycotoxins in Grain: Compounds Other Than Aflatoxin*; Eagan Press: St. Paul, MN, USA, 1994; pp. 3–541.
47. Bony, S.; Olivier-Loiseau, L.; Carcelen, M.; Devaux, A. Genotoxic potential associated with low levels of the *Fusarium* mycotoxins nivalenol and fusarenon X in a human intestinal cell line. *Toxicol. In Vitro* **2007**, *21*, 457–465. [[CrossRef](#)] [[PubMed](#)]
48. Kubosaki, A.; Aihara, M.; Park, B.J.; Sugiura, Y.; Shibutani, M.; Hirose, M.; Suzuki, Y.; Takatori, K.; Sugita-Konishi, Y. Immunotoxicity of nivalenol after subchronic dietary exposure to rats. *Food Chem. Toxicol.* **2008**, *46*, 253–258. [[CrossRef](#)] [[PubMed](#)]
49. Huang, S.; Wang, J.; Xing, L.; Shen, H.; Yan, X.; Wang, J.; Zhang, X. Impairment of cell cycle progression by sterigmatocystin in human pulmonary cells in vitro. *Food Chem. Toxicol.* **2014**, *66*, 89–95. [[CrossRef](#)] [[PubMed](#)]
50. Terao, K.; Aikawa, T.; Kera, K. A synergistic effect of nitrosodimethylamine on sterigmatocystin carcinogenesis in rats. *Food Cosmet. Toxicol.* **1978**, *16*, 591–596. [[CrossRef](#)]
51. Antony, M.; Shukla, Y.; Janardhanan, K.K. Potential risk of acute hepatotoxicity of kodo poisoning due to exposure to cyclopiazonic acid. *J. Ethnopharmacol.* **2003**, *87*, 211–214. [[CrossRef](#)]
52. Burdock, G.A.; Flamm, W.G. Review Article: Safety assessment of the mycotoxin cyclopiazonic acid. *Int. J. Toxicol.* **2000**, *19*, 195–218. [[CrossRef](#)]
53. Morrissey, R.E.; Norred, W.P.; Cole, R.J.; Dorner, J. Toxicity of the mycotoxin, cyclopiazonic acid, to Sprague-Dawley rats. *Toxicol. Appl. Pharmacol.* **1985**, *77*, 94–107. [[CrossRef](#)]
54. Peltonen, K.; Jestoi, M.; Eriksen, G.S. Health effects of moniliformin a poorly understood *Fusarium* mycotoxin. *World Mycotoxin J.* **2010**, *3*, 403–414. [[CrossRef](#)]
55. Zhang, A.; Cao, J.-L.; Yang, B.; Chen, J.-H.; Zhang, Z.-T.; Li, S.-Y.; Fu, Q.; Hugnes, C.E.; Caterson, B. Effects of moniliformin and selenium on human articular cartilage metabolism and their potential relationships to the pathogenesis of Kashin-Beck disease. *J. Zhejiang Univ. Sci. B* **2010**, *11*, 200–208. [[CrossRef](#)] [[PubMed](#)]
56. Prosperini, A.; Font, G.; Ruiz, M.J. Interaction effects of *Fusarium* enniatins (A, A1, B and B1) combinations on in vitro cytotoxicity of Caco-2 cells. *Toxicol. In Vitro* **2014**, *28*, 88–94. [[CrossRef](#)] [[PubMed](#)]
57. Juan-García, A.; Manyes, L.; Ruiz, M.-J.; Font, G. Involvement of enniatins-induced cytotoxicity in human HepG2 cells. *Toxicol. Lett.* **2013**, *218*, 166–173. [[CrossRef](#)] [[PubMed](#)]
58. Gammelsrud, A.; Solhaug, A.; Dendelé, B.; Sandberg, W.J.; Ivanova, L.; Kocbach Bølling, A.; Lagadic-Gossman, D.; Refsnes, M.; Becher, R.; Eriksen, G.; et al. Enniatin B-induced cell death and inflammatory responses in RAW 267.4 murine macrophages. *Toxicol. Appl. Pharmacol.* **2012**, *261*, 74–87. [[CrossRef](#)] [[PubMed](#)]
59. DeWitte-Orr, S.J.; Bols, N.C. Gliotoxin-induced cytotoxicity in three salmonid cell lines: Cell death by apoptosis and necrosis. *Comp. Biochem. Physiol. Part C Toxicol. Pharmacol.* **2005**, *141*, 157–167. [[CrossRef](#)] [[PubMed](#)]
60. Mueller, A.; Schlink, U.; Wichmann, G.; Bauer, M.; Graebisch, C.; Schürmann, G.; Herbarth, O. Individual and combined effects of mycotoxins from typical indoor moulds. *Toxicol. In Vitro* **2013**, *27*, 1970–1978. [[CrossRef](#)] [[PubMed](#)]

61. Nieminen, S.M.; Mäki-Paakkanen, J.; Hirvonen, M.-R.; Roponen, M.; von Wright, A. Genotoxicity of gliotoxin, a secondary metabolite of *Aspergillus fumigatus*, in a battery of short-term test systems. *Mutat. Res./Genet. Toxicol. Environ. Mutagen.* **2002**, *520*, 161–170. [[CrossRef](#)]
62. Niide, O.; Suzuki, Y.; Yoshimaru, T.; Inoue, T.; Takayama, T.; Ra, C. Fungal metabolite gliotoxin blocks mast cell activation by a calcium- and superoxide-dependent mechanism: Implications for immunosuppressive activities. *Clin. Immunol.* **2006**, *118*, 108–116. [[CrossRef](#)] [[PubMed](#)]
63. Hou, H.; Zhou, R.; Li, A.; Li, C.; Li, Q.; Liu, J.; Jiang, B. Citreoviridin inhibits cell proliferation and enhances apoptosis of human umbilical vein endothelial cells. *Environ. Toxicol. Pharmacol.* **2014**, *37*, 828–836. [[CrossRef](#)] [[PubMed](#)]
64. Morrissey, R.E.; Vesonder, R.F. Teratogenic potential of the mycotoxin, citreoviridin, in rats. *Food Chem. Toxicol.* **1986**, *24*, 1315–1320. [[CrossRef](#)]
65. Howard, D.H. *Pathogenic Fungi in Humans and Animals*, 2nd ed.; Marcel Dekker Inc.: New York, NY, USA, 2003; pp. 237–430.
66. Ribeiro, S.C.C.; Santana, A.N.C.; Arriagada, G.H.; Martins, J.E.C.; Takagaki, T.Y. A novel cause of invasive pulmonary infection in an immunocompetent patient: *Aspergillus candidus*. *J. Infect.* **2005**, *51*, e195–e197. [[CrossRef](#)] [[PubMed](#)]
67. Zhang, Q.Q.; Li, L.; Zhu, M.; Zhang, C.Y.; Wang, J.J. Primary cutaneous aspergillosis due to *Aspergillus flavus*: A case report. *Chin. Med. J.* **2005**, *118*, 255–257. [[PubMed](#)]
68. Latgé, J.-P. *Aspergillus fumigatus*, a saprotrophic pathogenic fungus. *Mycologist* **2003**, *17*, 56–61. [[CrossRef](#)]
69. Benndorf, D.; Muller, A.; Bock, K.; Manuwald, O.; Herbarth, O.; von Bergen, M. Identification of spore allergens from the indoor mould *Aspergillus versicolor*. *Allergy* **2008**, *63*, 454–460. [[CrossRef](#)] [[PubMed](#)]
70. Charles, M.V.P.; Joseph, N.M.; Easow, J.M.; Ravishankar, M. Invasive pulmonary aspergillosis caused by *Aspergillus versicolor* in a patient on mechanical ventilation. *Aust. Med. J.* **2011**, *4*, 632–634. [[CrossRef](#)] [[PubMed](#)]
71. Esnakula, A.K.; Summers, I.; Naab, T.J. Fatal disseminated *Fusarium* infection in a Human Immunodeficiency Virus positive patient. *Case Rep. Infect. Dis.* **2013**, *2013*, 1–5. [[CrossRef](#)] [[PubMed](#)]
72. Mochizuki, K.; Shiraki, I.; Murase, H.; Ohkusu, K.; Nishimura, K. Identification and sensitivity of two rare fungal species isolated from two patients with *Fusarium keratomycosis*. *J. Infect. Chemother.* **2012**, *18*, 939–944. [[CrossRef](#)] [[PubMed](#)]
73. Cocchi, S.; Codeluppi, M.; Venturelli, C.; Bedini, A.; Grottola, A.; Gennari, W.; Cavrini, F.; Di Benedetto, F.; De Ruvo, N.; Rumpianesi, F.; et al. *Fusarium verticillioides* fungemia in a liver transplantation patient: Successful treatment with voriconazole. *Diagn. Microbiol. Infect. Dis.* **2011**, *71*, 438–441. [[CrossRef](#)] [[PubMed](#)]
74. Georgiadou, S.P.; Velegraki, A.; Arabatzis, M.; Neonakis, I.; Chatzipanagiotou, S.; Dalekos, G.N.; Petinaki, E. Cluster of *Fusarium verticillioides* bloodstream infections among immunocompetent patients in an internal medicine department after reconstruction works in Larissa, Central Greece. *J. Hosp. Infect.* **2014**, *86*, 267–271. [[CrossRef](#)] [[PubMed](#)]
75. Mok, T.; Koehler, A.P.; Yu, M.Y.; Ellis, D.H.; Johnson, P.J.; Wickham, N.W.R. Fatal *Penicillium citrinum* pneumonia with pericarditis in a patient with acute leukemia. *J. Clin. Microbiol.* **1997**, *35*, 2654–2656. [[PubMed](#)]
76. Khan, H.A.A.; Karuppayil, M.S. Fungal pollution of indoor environments and its management. *Saudi J. Biol. Sci.* **2012**, *19*, 405–426. [[CrossRef](#)] [[PubMed](#)]
77. Pattron, D.D. *Aspergillus*, Health Implication & Recommendations for Public Health Food Safety. *J. Food Saf.* **2006**, *8*, 19–23.
78. Galimberti, R.; Torre, A.C.; Baztán, M.C.; Rodriguez-Chiappetta, F. Emerging systemic fungal infections. *Clin. Dermatol.* **2012**, *30*, 633–650. [[CrossRef](#)] [[PubMed](#)]
79. Fisher, G.; Müller, T.; Schwalbe, R.; Ostrowski, R.; Dott, W. Exposure to airborne fungi, MVOC and mycotoxins in biowaste-handling facilities. *Int. J. Hyg. Environ. Health* **2000**, *203*, 37–104. [[CrossRef](#)]
80. Kupfahl, C.; Michalka, A.; Lass-Flörl, C.; Fischer, G.; Haase, G.; Ruppert, T.; Geginat, G.; Hof, H. Gliotoxin production by clinical and environmental *Aspergillus fumigatus* strains. *Int. J. Med. Microbiol.* **2008**, *298*, 319–327. [[CrossRef](#)] [[PubMed](#)]
81. Wartenberg, D.; Lapp, K.; Jacobsen, I.D.; Dahse, H.-M.; Kniemeyer, O.; Heinekamp, T.; Brakhage, A.A. Secretome analysis of *Aspergillus fumigatus* reveals Asp-hemolysin as a major secreted protein. *Int. J. Med. Microbiol.* **2011**, *301*, 602–611. [[CrossRef](#)] [[PubMed](#)]

82. Li, B.-K.; Wang, X.; Ding, Q. RE: A case report of severe *Aspergillus flavus* penile infection. *Asian J. Androl.* **2009**, *11*, 638–640. [[CrossRef](#)] [[PubMed](#)]
83. Engelhart, S.; Loock, A.; Skutlarek, D.; Sagunski, H.; Lommel, A.; Fa'rber, H.; Exner, M. Occurrence of toxigenic *Aspergillus versicolor* isolates and sterigmatocystin in carpet dust from damp indoor environments. *Appl. Environ. Microbiol.* **2002**, *68*, 3886–3890. [[CrossRef](#)] [[PubMed](#)]
84. Fog Nielsen, K. Mycotoxin production by indoor molds. *Fungal Genet. Biol.* **2003**, *39*, 103–117. [[CrossRef](#)]
85. Torres-Rodríguez, J.M.; Madrenys-Brunet, N.; Siddat, M.; Lopez-Jodra, O.; Jimenez, T. *Aspergillus versicolor* as cause of onychomycosis: Report of 12 cases and susceptibility testing to antifungal drugs. *J. Eur. Acad. Dermatol. Venereol.* **1998**, *11*, 25–31. [[CrossRef](#)] [[PubMed](#)]
86. Krysinska-Traczyk, E.; Dutkiewicz, J. *Aspergillus candidus*: A respiratory hazard associated with grain dust. *Ann. Agric. Environ. Med.* **2000**, *7*, 101–109. [[PubMed](#)]
87. Shahan, T.A.; Sorenson, W.G.; Paulaskis, J.D.; Morey, R.; Lewis, D.M. Concentration- and time-dependent upregulation and release of the cytokines MIP-2, KC, TNF, and MIP-1a in rat alveolar macrophages by fungal spores implicated in airway inflammation. *Am. J. Respir. Cell Mol. Biol.* **1998**, *18*, 435–440. [[CrossRef](#)] [[PubMed](#)]
88. Nucci, M.; Anaissie, E. Cutaneous infection by *Fusarium* species in healthy and immunocompromised hosts: Implications for diagnosis and management. *Clin. Infect. Dis.* **2002**, *35*, 909–920. [[CrossRef](#)] [[PubMed](#)]
89. Nucci, M.; Anaissie, E. *Fusarium* Infections in Immunocompromised Patients. *Clin. Microbiol. Rev.* **2007**, *20*, 695–704. [[CrossRef](#)] [[PubMed](#)]
90. Consigny, S.; Dhedin, N.; Datry, A.; Choquet, S.; Leblond, V.r.; Chosidow, O. Successful Voriconazole Treatment of Disseminated *Fusarium* Infection in an Immunocompromised Patient. *Clin. Infect. Dis.* **2003**, *37*, 311–313. [[CrossRef](#)] [[PubMed](#)]
91. Sydenham, E.W.; Thiel, P.G.; Marasas, W.F.O.; Shephard, G.S.; van Schalkwyk, D.J.; Koch, K.R. Natural occurrence of some *Fusarium* mycotoxins in corn from low and high oesophageal cancer prevalence areas of the Transkei, southern Africa. *J. Agric. Food Chem.* **1990**, *38*, 1900–1903. [[CrossRef](#)]
92. Craddock, V.M. Aetiology of oesophageal cancer: Some operative factors. *Eur. J. Cancer Prev.* **1992**, *1*, 89–103. [[CrossRef](#)] [[PubMed](#)]
93. Tezcan, G.; Ozhak-Baysan, B.; Alastruey-Izquierdo, A.; Ogunc, D.; Ongut, G.; Yildiran, S.T.; Hazar, V.; Cuenca-Estrella, M.; Rodriguez-Tudela, J.L. Disseminated Fusariosis Caused by *Fusarium verticillioides* in an Acute Lymphoblastic Leukemia Patient after Allogeneic Hematopoietic Stem Cell Transplantation. *J. Clin. Microbiol.* **2009**, *47*, 278–281. [[CrossRef](#)] [[PubMed](#)]
94. Kriek, N.P.J.; Marasas, W.F.O.; Thiel, P.G. Hepato- and cardiotoxicity of *Fusarium verticillioides* (*F. moniliforme*) isolates from Southern African maize. *Food Cosmet. Toxicol.* **1981**, *19*, 447–456. [[CrossRef](#)]
95. Zhang, N.; O'Donnell, K.; Geiser, D.M. Members of the *Fusarium solani* species complex that cause infections in both humans and plants are common in the environment. *J. Clin. Microbiol.* **2006**, *44*, 2186–2190. [[CrossRef](#)] [[PubMed](#)]
96. O'Donnell, K.; Sutton, D.A.; Rinaldi, M.G.; Magnon, K.C.; Cox, P.A.; Revankar, S.G.; Sanche, S.; Geiser, D.M.; Juba, J.H.; van Burik, J.A.; et al. Genetic diversity of human pathogenic members of the *Fusarium oxysporum* complex inferred from multilocus DNA sequence data and amplified fragment length polymorphism analyses: Evidence for the recent dispersion of a geographically widespread clonal lineage and nosocomial origin. *J. Clin. Microbiol.* **2004**, *42*, 5109–5120. [[PubMed](#)]
97. Gordon, T.R.; Martyn, R.D. The evolutionary biology of *Fusarium oxysporum*. *Ann. Rev. Phytopathol.* **1997**, *35*, 111–128. [[CrossRef](#)] [[PubMed](#)]
98. Roncero, M.I.G.; Hera, C.; Ruiz-Rubio, M.; Maceira, F.I.G.; Madrid, M.P.; Caracuel, Z.; Calero, F.; Delgado-Jarana, J.; Roldán-Rodríguez, R.; Martínez-Rocha, A.L.; et al. *Fusarium* as a model for studying virulence in soilborne plant pathogens. *Physiol. Mol. Plant Pathol.* **2003**, *62*, 87–98. [[CrossRef](#)]
99. Chithra, V.; Rao, T.; Sathivathy, K.; Suseela, K.; Binoy, K. Onychomycosis due to *Fusarium oxysporum*. *Int. J. Infect. Dis.* **2008**, *7*, 1–3.
100. Imwidthaya, P.; Thipsuvan, K.; Chaiprasert, A.; Danchaiwjittra, S.; Sutthent, R.; Jearanaisilavong, J. *Penicillium marneffei*: Types and drug susceptibility. *Mycopathologia* **2001**, *149*, 109–115. [[CrossRef](#)] [[PubMed](#)]
101. Suryanarayanan, T.S.; Senthilarasu, G.; Muruganandam, V. Endophytic fungi from *Cuscuta rejlaxa* and its host plants. *Fungal Divers.* **2000**, *4*, 117–123.

102. Arivudainambi, U.; Kanugula, K.; Kotamraju, S.; Karunakaran, C.; Rajendran, A. Cytotoxic and antibacterial activities of secondary metabolites from endophytic fungus *Pestalotiopsis virgatula* VN2. *Curr. Res. Environ. Appl. Mycol.* **2014**, *4*, 107–115.
103. Gangadevi, V.; Muthumary, J. Preliminary studies on cytotoxic effect of fungal taxol on cancer cell lines. *Afr. J. Biotechnol.* **2007**, *6*, 1382–1386.
104. Sudarmono, P.; Utji, R.; Kardon, L.; Kumala, S. Cytotoxic assay of endophytic fungus 1.2.11 secondary metabolites from *Brucea javanica* (L) Merr towards cancer cell in vitro. *Cytotoxic Assay Second. Metab.* **2006**, *15*, 137–144. [[CrossRef](#)]
105. Chakravarthi, B.; Sujay, R.; Kuriakose, G.; Karande, A.; Jayabaskaran, C. Inhibition of cancer cell proliferation and apoptosis-inducing activity of fungal taxol and its precursor baccatin III purified from endophytic *Fusarium solani*. *Cancer Cell Int.* **2013**, *13*, 1–11. [[CrossRef](#)] [[PubMed](#)]
106. Katoch, M.; Singh, G.; Sharma, S.; Gupta, N.; Sangwan, P.L.; Saxena, A.K. Cytotoxic and antimicrobial activities of endophytic fungi isolated from *Bacopa monnieri* (L.) Pennell (Scrophulariaceae). *BMC Complement. Altern. Med.* **2014**, *14*, 1–8. [[CrossRef](#)] [[PubMed](#)]
107. Gniadek, A.; Macura, A.B.; Gorkiewicz, M. Cytotoxicity of *Aspergillus* fungi isolated from hospital environment. *Polish J. Microbiol.* **2011**, *60*, 59–63.
108. Kamei, K.; Watanabe, A.; Nishimura, K.; Miyaji, M. Cytotoxicity of *Aspergillus fumigatus* culture filtrate against macrophages. *Jpn. J. Med. Mycol.* **2002**, *43*, 37–41. [[CrossRef](#)]
109. Heussner, A.H.; Dietrich, D.R.; O'Brien, E. In vitro investigation of individual and combined cytotoxic effects of ochratoxin A and other selected mycotoxins on renal cells. *Toxicol. In Vitro* **2006**, *20*, 332–341. [[CrossRef](#)] [[PubMed](#)]
110. Lei, M.; Zhang, N.; Qi, D. In vitro investigation of individual and combined cytotoxic effects of aflatoxin B1 and other selected mycotoxins on the cell line porcine kidney 15. *Exp. Toxicol. Pathol.* **2013**, *65*, 1149–1157. [[CrossRef](#)] [[PubMed](#)]
111. Stoev, S.; Denev, S.; Dutton, M.F.; Nkosi, B. Cytotoxic effect of some mycotoxins and their combinations on human peripheral blood mononuclear cells as measured by the MTT assay. *Open Toxicol. J.* **2009**, *2*, 1–8. [[CrossRef](#)]
112. Abeywickrama, K.; Bean, G.A. Cytotoxicity of *Fusarium* species mycotoxins and culture filtrates of *Fusarium* species isolated from the medicinal plant *Tribulus terrestris* to mammalian cells. *Mycopathologia* **1992**, *120*, 189–193. [[CrossRef](#)] [[PubMed](#)]
113. Hameed, S.; Sultana, V.; Ara, J.; Ehteshamul-Haque, S.; Athar, M. Toxicity of *Fusarium solani* strains on brine shrimp (*Artemia salina*). *Zool. Res.* **2009**, *30*, 468–472.
114. Langseth, W.; Bernhoft, A.; Rundberget, T.; Kosiak, B.; Gareis, M. Mycotoxin production and cytotoxicity of *Fusarium* strains isolated from Norwegian cereals. *Mycopathologia* **1999**, *144*, 103–113. [[CrossRef](#)]
115. Abbas, H.K.; Yoshizawa, T.; Shier, W.T. Cytotoxicity and phytotoxicity of trichothecene mycotoxins produced by *Fusarium* spp. *Toxicon* **2013**, *74*, 68–75. [[CrossRef](#)] [[PubMed](#)]
116. Cetin, Y.; Bullerman, L.B. Cytotoxicity of *Fusarium* mycotoxins to mammalian cell cultures as determined by the MTT bioassay. *Food Chem. Toxicol.* **2005**, *43*, 755–764. [[CrossRef](#)] [[PubMed](#)]
117. Gutleb, A.C.; Morrison, E.; Murk, A.J. Cytotoxicity assays for mycotoxins produced by *Fusarium* strains: A review. *Environ. Toxicol. Pharmacol.* **2002**, *11*, 309–320. [[CrossRef](#)]
118. Wan, L.Y.M.; Turner, P.C.; El-Nezami, H. Individual and combined cytotoxic effects of *Fusarium* toxins (deoxynivalenol, nivalenol, zearalenone and fumonisins B1) on swine jejunal epithelial cells. *Food Chem. Toxicol.* **2013**, *57*, 276–283. [[CrossRef](#)] [[PubMed](#)]
119. Shah, G.S.; Shier, W.T.J.; Tahir, N.; Hameed, A.; Ahmad, S.; Ali, N. *Penicillium verruculosum* SG: A source of polyketide and bioactive compounds with varying cytotoxic activities against normal and cancer lines. *Arch. Microbiol.* **2014**, *196*, 267–278. [[CrossRef](#)] [[PubMed](#)]
120. Geiger, M.; Guitton, Y.; Vansteelandt, M.; Kerzaon, I.; Blanchet, E.; Robiou du Pont, T.; Frisvad, J.C.; Hess, P.; Pouchus, Y.F.; Grovel, O. Cytotoxicity and mycotoxin production of shellfish-derived *Penicillium* spp.; a risk for shellfish consumers. *Lett. Appl. Microbiol.* **2013**, *57*, 385–392. [[CrossRef](#)] [[PubMed](#)]
121. Mwanza, M.; Kametler, L.; Bonai, A.; Rajli, V.; Kovacs, M.; Dutton, M.F. The cytotoxic effect of fumonisin B1 and ochratoxin A on human and pig lymphocytes using the Methyl Thiazol Tetrazolium (MTT) assay. *Mycotoxin Res.* **2009**, *25*, 233–238. [[CrossRef](#)] [[PubMed](#)]

122. Oh, S.-Y.; Boermans, H.J.; Swamy, H.V.L.N.; Sharma, B.S.; Karrow, N.A. Immunotoxicity of Penicillium mycotoxins on viability and proliferation of Bovine macrophage cell line (BOMACs). *Open Mycol. J.* **2012**, *6*, 11–16. [[CrossRef](#)]
123. Abbas, A.K.; Lichtman, A.H. *Basic Immunology: Functions and Disorders of the Immune System*; Saunders/Elsevier: Philadelphia, PA, USA, 2010.
124. Corrier, D.E. Mycotoxicosis: Mechanisms of immunosuppression. *Vet. Immunol. Immunopathol.* **1991**, *30*, 73–87. [[CrossRef](#)]
125. Pahl, H.L.; Krau, B.; Schulze-Osthoff, K.; Decker, T.; Traenckner, E.B.-M.; Vogt, M.; Myers, C.; Parks, T.; Warring, P.; Mühlbacher, A.; et al. The Immunosuppressive Fungal Metabolite Gliotoxin specifically Inhibits Transcription Factor NF- κ B. *J. Exp. Med.* **1996**, *183*, 1829–1840. [[CrossRef](#)] [[PubMed](#)]
126. Fontaine, T.; Delangle, A.; Simenel, C.; Coddeville, B.; van Vliet, S.J.; van Kooyk, Y.; Bozza, S.; Moretti, S.; Schwarz, F.; Trichot, C.; et al. Galactosaminogalactan, a new immunosuppressive polysaccharide of *Aspergillus fumigatus*. *PLoS Pathog.* **2011**, *7*, e1002372. [[CrossRef](#)] [[PubMed](#)]
127. Tudek, B.; Winczura, A.; Janik, J.; Siomek, A.; Foksinski, M.; Oliński, R. Involvement of oxidatively damaged DNA and repair in cancer development and aging. *Am. J. Trans. Res.* **2010**, *2*, 254–284.
128. Fehr, M.; Baechler, S.; Kropat, C.; Mielke, C.; Boege, F.; Pahlke, G.; Marko, D. Repair of DNA damage induced by the mycotoxin alternariol involves tyrosyl-DNA phosphodiesterase 1. *Mycotoxin Res.* **2010**, *26*, 247–256. [[CrossRef](#)] [[PubMed](#)]
129. McLean, M.; Dutton, M.F. Cellular interactions and metabolism of aflatoxin: An update. *Pharmacol. Ther.* **1995**, *65*, 163–192. [[CrossRef](#)]
130. Wang, J.-S.; Groopman, J.D. DNA damage by mycotoxins. *Mutat. Res./Fundam. Mol. Mech. Mutagen.* **1999**, *424*, 167–181. [[CrossRef](#)]
131. Egner, P.A.; Wang, J.B.; Zhu, Y.R.; Zhang, B.C.; Wu, Y.; Zhang, Q.N.; Qian, G.S.; Kuang, S.Y.; Gange, S.J.; Jacobson, L.P.; et al. Chlorophyllin intervention reduces aflatoxin-DNA adducts in individuals at high risk for liver cancer. *Proc. Natl. Acad. Sci. USA* **2001**, *98*, 14601–14606. [[CrossRef](#)] [[PubMed](#)]
132. Dong, W.; Simeonova, P.P.; Gallucci, R.; Matheson, J.; Flood, L.; Wang, S.; Hubbs, A.; Luster, M.I. Toxic Metals Stimulate Inflammatory Cytokines in Hepatocytes through Oxidative Stress Mechanisms. *Toxicol. Appl. Pharmacol.* **1998**, *151*, 359–366. [[CrossRef](#)] [[PubMed](#)]



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