

## Mycotoxins and Health Effects

CAVEAT: The entries in this table provide examples of the toxins and health effects that have been associated with some fungi. There are thousands of different types of fungi. This is only a partial list.

Metabolite	Disease	Organisms	Health Concerns
<b>Gliotoxin</b>	Invasive aspergillosis	Aspergillus fumigatus, terres, flavus, niger, Trichoderma virens, Penicillium spp, Candida albican	Immune toxicity, immune suppression, neurotoxicity
<b>Aflatoxin B1; kojic acid; aspergillilic acid; nitropopionic acid</b>	Carcinogenesis	Aspergillus flavus	Liver pathology and cancer; immune toxicity; neurotoxicity
<b>Fumigaclavines; fumitoxins; fumitermogens; verruculogen; gliotoxin</b>	Aspergillosis	Aspergillus fumigatus	Lung disease; neurotoxicity; tremors; immune toxicity
<b>Ochratoxin A</b>	BEN Urinary tract tumors; Aspergillosis	Aspergillus niger Penicillium verrucsum	Immunosuppression BEN Lung disease
<b>Ochratoxin A</b>	Urinary tract	Aspergillus ochraceus	Nephropathology
<b>Penicillic Acid; Xanthomegnin; Viomellein; Vioxanthin</b>	Tumors		
<b>Sterigmatocystin 5-methoxysterigmatocystin</b>	Carcinogenesis	Aspergillus versicolor	Liver pathology and cancer
<b>Chaetomium; Chaetoglobosum A and C</b>	Unknown	Chaetomium globosum	Cytotoxicity Cell division
<b>Griseofulvin; Dechlorgrseofulvins Trichodermin; Trichoderma</b>	Unknown	Memnoniella echinata	Carcinogenesis Reproductive Toxin Hypersensitivity Protein synthesis inhibition
<b>Mycophenolic acid</b>	Unknown	Penicillium brevicompactum	Cytotoxic; mutagen
<b>Botryodiploidin  Patulin; citrinin Chaetoglobosin Roquefortine C</b>	Unknown	Penicillium expansum	Immune toxicity; cytotoxic  Tremors

<b>Verrucosidins</b> <b>Penicillic acid</b>	Unknown	Penicillium plonicium	Tremors, cytotoxicity Nephropathology
<b>Trichothecenes</b> <b>Trichodermol</b> <b>Trichodermin</b>	Unknown	Trichoderma species	Trichothecene toxicity Immunotoxicity
<b>Fumonisin</b>	CNS birth defects	Fusarium verticillioides (aka moniliforme)	Neural tube defects in animals and humans
<b>Spirocyclic</b> <b>Drimanes; roridin</b> <b>Satratoxins (F, G, H)</b> <b>Hydroxyroridin E</b> <b>Verrucarins J</b>	Pulmonary bleeding	Stachybotrys chartarum	Respiratory bleeding Protein synthesis inhibition Neurotoxicity Cytotoxicity Immune toxicity

BEN = Balkan Endemic Nephropathy

Source: The Biocontaminants and Complexity of Damp Indoor Spaces: More than What Meets the Eyes (Authors: Thrasher JD and Crawley S). *Toxicology and Industrial Health*. 2009.