



VibrantWellness | Mycotoxins: Specific Binding Agents

	Activated Carbon	Activated Charcoal	Alfalfa Fiber	Beta Glucan	Cholestyramine	Chlorella	Clays	Diatomaceous Earth	Fulvic Acid	Glucosamine	Humic Acid	NAC	Probiotics	Spore Based Probiotics	Zeolites
Aflatoxin	X	X		X		X	X	X		X	X		X	X	X
Ochratoxin	X	X		X	X		X	X		X	X	X	X	X	X
Zearalenone	X	X	X	X			X	X	X	X	X		X	X	X
Enniatin B1							X							X	
Fumonisin (B1, B2, B3)	X	X		X	X		X	X		X			X	X	X
Citrinin & Dihydrocitrinin		X												X	
Patulin	X	X		X			X						X	X	
Glutotoxin							X					X		X	
Mycophenolic Acid		X			X		X							X	X
Chaetoglobosin A		X			X	X	X					X		X	
Macrocyclic Trichothecenes	X	X											X		
Fusarium Trichothecenes	X	X	X	X	X		X	X		X	X	X	X	X	

Macrocyclic Trichothecenes: Isosatratoxin F, Riordin A, Riordin E, Riordin H, Riordin L-2, Satratoxin G, Satratoxin H, Verrucarin A, Verrucarin J

Fusarium Trichothecenes: Deoxynivalenol (Vomitoxin/DON), Nivalenol, Diacetoxyscirpenol (DAS), T-2 Toxin

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References:

1. Hope J. A review of the mechanism of injury and treatment approaches for illness resulting from exposure to water-damaged buildings, mold, and mycotoxins. *Scientific World Journal*. 2013;2013:767482. Published 2013 Apr 18. doi:10.1155/2013/767482
2. Wang P, Afriyie-Gyawu E, Tang Y, et al. NovaSil clay intervention in Ghanaians at high risk for aflatoxicosis: II. Reduction in biomarkers of aflatoxin exposure in blood and urine. *Food Addit Contam Part A Chem Anal Control Expo Risk Assess*. 2008;25(5):622-634. doi:10.1080/02652030701598694
3. Phillips TD, Afriyie-Gyawu E, Williams J, et al. Reducing human exposure to aflatoxin through the use of clay: a review. *Food Addit Contam Part A Chem Anal Control Expo Risk Assess*. 2008;25(2):134-145. doi:10.1080/02652030701567467
4. Gross-Steinmeyer K, Eaton DL. Dietary modulation of the biotransformation and genotoxicity of aflatoxin B(1). *Toxicology*. 2012;299(2-3):69-79. doi:10.1016/j.tox.2012.05.016
5. Decker WJ, Corby DG. Activated charcoal adsorbs aflatoxin B1. *Vet Hum Toxicol*. 1980;22(6):388-389. <https://pubmed.ncbi.nlm.nih.gov/6782748/>. Accessed September 23, 2022.
6. Boudergue C, Burel C, Dragacci S, et al. Review of mycotoxin-detoxifying agents used as feed additives: mode of action, efficacy and feed/food safety. *EFSA Support Publ*. 2009;6(9): EN-22, 192. doi:10.2903/sp.efsa.2009.EN-22
7. Vetvicka V. Effects of β -glucan on some environmental toxins: An overview. *Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub*. 2014;158(1):1-4. doi:10.5507/bp.2013.090
8. Dvorák M. Schopnost bentonitu a přírodního zeolitu adsorbovat aflatoxin z tekutých prostředí [Ability of bentonite and natural zeolite to adsorb aflatoxin from liquid media]. *Vet Med (Praha)*. 1989;34(5):307-316.
9. Pattar J, Shridhar NB, Suhasini K, et al. Protective role of diatomaceous earth (DAE) on combined mycotoxicosis of aflatoxin B1 and ochratoxin A in coloured broiler (RAJA II) chickens. *J Entomol Zool Stud*. 2020; 8(2): 1424-1429. <https://www.entomoljournal.com/archives/2020/vol8issue2/PartX/7-4-93-266.pdf>
10. Murthy TNK, Reddy BN, Devegowda G. Evaluation of glucomannan for its adsorbing ability of aflatoxin B1 and T-2 toxin in the gastrointestinal tract of broiler chickens. *Mycotox Res*. 2002;18(1):20–23. <https://doi.org/10.1007/BF02946055>
11. Istiqomah L, Damayanti E, Arisnandhy D, et al. Saccharomyces cerevisiae B18 as antifungal and aflatoxin binder in vitro, AIP Conference Proceedings 2099. 2019;020009 <https://doi.org/10.1063/1.5098414>
12. Kosztik J, Mörtl M, Székács A, Kukolya J, Bata-Vidács I. Aflatoxin B1 and sterigmatocystin binding potential of lactobacilli. *Toxins (Basel)*. 2020;12(12):756. Published 2020 Nov 30. doi:10.3390/toxins12120756
13. De Jesus CL, Bartley A, Welch AZ, Berry JP. High incidence and levels of ochratoxin A in wines sourced from the United States. *Toxins (Basel)*. 2017;10(1):1. Published 2017 Dec 21. doi:10.3390/toxins10010001
14. Joannis-Cassan C, Tozlovanu M, Hadjeba-Medjdoub K, et al. Zearalenone, aflatoxin B1, and ochratoxin A by yeast-based products: a method for quantification of adsorption performance. *J Food Prot*. 2011;74(7):1175-1185. <https://doi.org/10.4315/0362-028X.JFP-11-023>
15. Kerkadi A, Barriault C, Marquardt RR, et al. Cholestyramine protection against ochratoxin A toxicity: role of ochratoxin A sorption by the resin and bile acid enterohepatic circulation. *J Food Prot*. 1999;62(12):1461-1465. doi: 10.4315/0362-028x-62.12.1461.
16. Armando MR, Pizzolitto RP, Dogi CA, et al. Adsorption of ochratoxin A and zearalenone by potential probiotic Saccharomyces cerevisiae strains and its relation with cell wall thickness. *J Appl Microbiol*. 2012;113(2):256-264. doi:10.1111/j.1365-2672.2012.05331.x
17. Karami-Osboo R, Maham M, Nasrollahzadeh M. Synthesised magnetic nano-zeolite as a mycotoxins binder to reduce the toxicity of aflatoxins, zearalenone, ochratoxin A, and deoxynivalenol in barley. *IET Nanobio-technol*. 2020;14(7):623-627. doi:10.1049/iet-nbt.2020.0107
18. Chlebicz A, Śliżewska K. In vitro detoxification of aflatoxin B1, deoxynivalenol, fumonisins, T-2 toxin and zearalenone by probiotic bacteria from genus lactobacillus and Saccharomyces cerevisiae yeast. *Probiotics Antimicrob Proteins*. 2020;12(1):289-301. doi:10.1007/s12602-018-9512-x
19. Karami-Osboo R, Maham M, Nasrollahzadeh M. Synthesised magnetic nano-zeolite as a mycotoxins binder to reduce the toxicity of aflatoxins, zearalenone, ochratoxin A, and deoxynivalenol in barley. *IET Nanobio-technol*. 2020;14(7):623-627. doi:10.1049/iet-nbt.2020.0107
20. Bertero A, Fossati P, Tedesco DEA, Caloni F. Beauvericin and Enniatins: In Vitro Intestinal Effects. *Toxins (Basel)*. 2020;12(11):686. Published 2020 Oct 29. doi:10.3390/toxins12110686
21. Niderkorn V, Morgavi D, Aboab B, Lemaire M, Boudra H. Cell wall component and mycotoxin moieties involved in the binding of fumonisin B1 and B2 by lactic acid bacteria. *J Appl Microbiol*, 2009;106: 977-985. <https://doi.org/10.1111/j.1365-2672.2008.04065.x>
22. Kamle M, Mahato DK, Gupta A, et al. Citrinin mycotoxin contamination in food and feed: impact on agriculture, human health, and detection and management strategies. *Toxins (Basel)*. 2022;14(2):85. Published 2022 Jan 23. doi:10.3390/toxins14020085
23. loi JD, Zhou T, Tsao R, F Marcone M. Mitigation of patulin in fresh and processed foods and beverages. *Toxins (Basel)*. 2017;9(5):157. Published 2017 May 11. doi:10.3390/toxins9050157
24. Novak M, Vetvicka V. B-glucans, history, and the present: immunomodulatory aspects and mechanisms of action, *J Immunotoxicol*. 2008;5(1):47-57. doi: 10.1080/15476910802019045
25. Oporto CI, Villarroel CA, Tapia SM, García V, Cubillos FA. Distinct transcriptional changes in response to patulin underlie toxin biosorption differences in Saccharomyces cerevisiae. *Toxins (Basel)*. 2019;11(7):400. Published 2019 Jul 10. doi:10.3390/toxins11070400
26. Moosavi M. Bentonite clay as a natural remedy: a brief review. *Iran J Public Health*. 2017;46(9):1176-1183.
27. Zhou X, Zhao A, Goping G, Hirszel P. Gliotoxin-induced cytotoxicity proceeds via apoptosis and is mediated by caspases and reactive oxygen species in LLC-PK1 cells. *Toxicol Sci*. 2000;54(1):194-202. doi:10.1093/toxsci/54.1.194
28. Novartis. Myfortic - Food and Drug Administration. Published 2009. https://www.accessdata.fda.gov/drugsatfda_docs/label/2009/050791s007lbl.pdf.
29. MastCell360. MC360 Precision Mold Master Class Precision Binders. 2021. <https://mastcell360.com/wp-content/uploads/2021/09/Mold-Course-Transcript-27.pdf>
30. Whitlow LW. Evaluation of mycotoxin binders. North Carolina State University. Proceedings of the 4th Mid-Atlantic Nutrition Conference. 2006. <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.414.9367&rep=rep1&type=pdf>

