

# EFFECT OF MYCOTOXINS ON THE QUALITY OF ANIMAL PRODUCTS

Ivana Kolackova, Daria Bahulet, Barbora Smolkova

**Food Symposium 2023**

Affiliation: Department of Animal Nutrition and Forage Production, Faculty of AgriSciences, Mendel University in Brno, Brno, Czech Republic

Contact: ivana.kolackova@mendelu.cz

## List of references

- ALIM, Muhammad, Shahzad Zafar IQBAL, Zahid MEHMOOD, Muhammad Rafique ASI, Hira ZIKAR, Humaira CHANDA a Noeen MALIK, 2018. Survey of mycotoxins in retail market cereals, derived products and evaluation of their dietary intake. *Food Control* [online]. 84, 471–477. ISSN 0956-7135. Dostupné z: doi:10.1016/j.foodcont.2017.08.034
- AZARIKIA, Manizheh, Reza MAHDAVI a Leila NIKNIAZ, 2018. Occurrence and dietary factors associated with the presence of aflatoxin B1 and M1 in breast milk of nursing mothers in Iran. *Food Control* [online]. 86, 207–213. ISSN 0956-7135. Dostupné z: doi:10.1016/j.foodcont.2017.11.009
- BAHOLET, Daria, Ivana KOLACKOVA, Libor KALHOTKA, Jiri SKLADANKA a Peter HANINEC, 2019. Effect of Species, Fertilization and Harvest Date on Microbial Composition and Mycotoxin Content in Forage. *Agriculture* [online]. 9(5), 102. Dostupné z: doi:10.3390/agriculture9050102
- BATT, Carl A., 2014. Encyclopedia of Food Microbiology. B.m.: Academic Press. ISBN 978-0-12-384733-1.
- BIOMIN, 2016. World Mycotoxin Survey [online]. Annual report 13. [vid. 2022-10-11]. Dostupné z: <https://www.biomin.net/science-hub/world-mycotoxin-survey-impact-2021/>
- BULLERMAN, L. B., 2003. MYCOTOXINS | Classifications. In: Benjamin CABALLERO, ed. Encyclopedia of Food Sciences and Nutrition (Second Edition) [online]. Oxford: Academic Press, s. 4080–4089 [vid. 2018-02-28]. ISBN 978-0-12-227055-0. Dostupné z: doi:10.1016/B0-12-227055-X/00821-X
- DÄNICKE, Sven a Janine WINKLER, 2015. Invited review: Diagnosis of zearalenone (ZEN) exposure of farm animals and transfer of its residues into edible tissues (carry over). *Food and Chemical Toxicology* [online]. 84, 225–249. ISSN 0278-6915. Dostupné z: doi:10.1016/j.fct.2015.08.009

EZE, Ukpai A., John HUNTRISS, Michael N. ROUTLEDGE a Yun Yun GONG, 2018. Toxicological effects of regulated mycotoxins and persistent organochloride pesticides: In vitro cytotoxic assessment of single and defined mixtures on MA-10 murine Leydig cell line. *Toxicology in Vitro* [online]. 48, 93–103. ISSN 0887-2333. Dostupné z: doi:10.1016/j.tiv.2017.12.019

FLORES-FLORES, Myra Evelyn a Elena GONZÁLEZ-PEÑAS, 2018. Short communication: Analysis of mycotoxins in Spanish milk. *Journal of Dairy Science* [online]. 101(1), 113–117. ISSN 0022-0302. Dostupné z: doi:10.3168/jds.2017-13290

GAMLIEL, A., H. W. DEHNE, P. KARLOVSKY a J. FLETCHER, 2017. Detection of Mycotoxins in Food: Applications of Rapid and Reliable Tools in a Biosecurity Context. In: M. L. GULLINO, J. P. STACK, J. FLETCHER a J. D. MUMFORD, ed. *Practical Tools for Plant and Food Biosecurity: Results from a European Network of Excellence* [online]. Cham: Springer International Publishing, s. 143–162. ISBN 978-3-319-46897-6. Dostupné z: doi:10.1007/978-3-319-46897-6\_7

GROOPMAN, J. D. a G. N. WOGAN, 2016. Aflatoxin: A Global Public Health Problem. In: *Encyclopedia of Food and Health* [online]. Oxford: Academic Press, s. 68–72 [vid. 2018-02-28]. ISBN 978-0-12-384953-3. Dostupné z: doi:10.1016/B978-0-12-384947-2.00015-5

GRUBER-DORNINGER, Christiane, Timothy JENKINS a Gerd SCHATZMAYR, 2019. Global Mycotoxin Occurrence in Feed: A Ten-Year Survey. *Toxins* [online]. 11(7), 375. ISSN 2072-6651. Dostupné z: doi:10.3390/toxins11070375

PLEADIN, Jelka, Tina LEŠIĆ, Dragan MILIĆEVIĆ, Ksenija MARKOV, Bojan ŠARKANJ, Nada VAHČIĆ, Ivana KMETIĆ a Manuela ZADRAVEC, 2021. Pathways of Mycotoxin Occurrence in Meat Products: A Review. *Processes* [online]. 9(12), 2122. ISSN 2227-9717. Dostupné z: doi:10.3390/pr9122122

HASSAN, Zahoor Ul, Roda Fahad AL-THANI, Quirico MIGHELI a Samir JAOUA, 2018. Detection of toxigenic mycobiota and mycotoxins in cereal feed market. *Food Control* [online]. 84, 389–394 [vid. 2018-01-24]. ISSN 0956-7135. Dostupné z: doi:10.1016/j.foodcont.2017.08.032

HERNÁNDEZ-MARTÍNEZ, Raquel a Iñigo NAVARRO-BLASCO, 2015. Surveillance of aflatoxin content in dairy cow feedstuff from Navarra (Spain). *Animal Feed Science and Technology* [online]. 200, 35–46. ISSN 0377-8401. Dostupné z: doi:10.1016/j.anifeedsci.2014.12.002

LE, Thanh-Huong, Imourana ALASSANE-KPEMBI, Isabelle P. OSWALD a Philippe PINTON, 2018. Analysis of the interactions between environmental and food contaminants, cadmium and deoxynivalenol, in different target organs. *Science of The Total Environment* [online]. 622–623, 841–848. ISSN 0048-9697. Dostupné z: doi:10.1016/j.scitotenv.2017.12.014

LIU, Wenyi, Lingqiao WANG, Chuanfen ZHENG, Lebin LIU, Jia WANG, Daibo LI, Yao TAN, Xilong ZHAO, Lixiong HE a Weiqun SHU, 2018. Microcystin-LR increases genotoxicity induced by aflatoxin B1 through oxidative stress and DNA base excision repair genes in human hepatic cell lines. *Environmental Pollution* [online]. 233, 455–463. ISSN 0269-7491. Dostupné z: doi:10.1016/j.envpol.2017.10.067

OLIVEIRA, Carlos Augusto Fernandes, Estela KOBASHIGAWA, Tatiana Alves REIS, Lucineia MESTIERI, Ricardo ALBUQUERQUE a Lucineia Mestieri Benedito CORREA, 2000. Aflatoxin B1 residues in eggs of laying hens fed a diet containing different levels of the mycotoxin. *Food Additives & Contaminants* [online]. 17(6), 459–462. ISSN 0265-203X. Dostupné z: doi:10.1080/02652030050034037

PECORELLI, I., R. BRANCIARI, R. ORTENZI, M. CIRIACI, S. CHECCARELLI, R. ROILA, A. CAPOTORTI, G. SPACCINI a A. VALIANI, 2018. Evaluation of the concentration factor of aflatoxin M1 in a semi-hard Pecorino cheese obtained from naturally contaminated milk. *Food Control* [online]. 85, 194–198. ISSN 0956-7135. Dostupné z: doi:10.1016/j.foodcont.2017.09.026

PLEADIN, Jelka, Tina LEŠIĆ, Dragan MILIĆEVIĆ, Ksenija MARKOV, Bojan ŠARKANJ, Nada VAHČIĆ, Ivana KMETIĆ a Manuela ZADRAVEC, 2021. Pathways of Mycotoxin Occurrence in Meat Products: A Review. *Processes* [online]. 9(12), 2122. ISSN 2227-9717. Dostupné z: doi:10.3390/pr9122122

SKLÁDANKA, J., Š. HOŠKOVÁ, V. ADAM, J. NEDĚLNÍK, V. DOHNAL a R. KIZEK, 2014. Mycotoxins and molecular mass thiols in the grass forages. 1. Brno: Mendelova univerzita v Brně. ISBN 978-80-7509-140-6.

SKLÁDANKA, Jiří, Jan NEDĚLNÍK, Vojtěch ADAM, Petr DOLEŽAL, Hana MORAVCOVÁ a Vlastimil DOHNAL, 2011. Forage as a Primary Source of Mycotoxins in Animal Diets. *International Journal of Environmental Research and Public Health* [online]. 8(1), 37–50. ISSN 1660-4601. Dostupné z: doi:10.3390/ijerph8010037

VÖLKEL, Inger, Eva SCHRÖER-MERKER a Claus-Peter CZERNY, 2011. The Carry-Over of Mycotoxins in Products of Animal Origin with Special Regard to Its Implications for the European Food Safety Legislation. *Food and Nutrition Sciences* [online]. 2(8), 852–867. Dostupné z: doi:10.4236/fns.2011.28117

ZATECKA, E., L. DED, F. ELZEINOVA, A. KUBATOVA, A. DOROSH, H. MARGARYAN, P. DOSTALOVA, V. KORENKOVA, K. HOSKOVA a J. PEKNICOVA, 2014. Effect of zearalenone on reproductive parameters and expression of selected testicular genes in mice. *Reproductive Toxicology* [online]. 45, 20–30. ISSN 0890-6238. Dostupné z: doi:10.1016/j.reprotox.2014.01.003

ZHOU, Hongyuan, Lili TANG, Kathy S. XUE, He QIAN, Xiulan SUN, Phillip L. WILLIAMS a Jia-Sheng WANG, 2018a. Trans-/multi-generational effects of deoxynivalenol on *Caenorhabditis elegans*. *Chemosphere* [online]. 201, 41–49. ISSN 0045-6535. Dostupné z: doi:10.1016/j.chemosphere.2018.02.173

ZHOU, Jian, Jiao-Jiao XU, Jin-Mi CONG, Zeng-Xuan CAI, Jing-Shun ZHANG, Jun-Lin WANG a Yi-Ping REN, 2018b. Optimization for quick, easy, cheap, effective, rugged and safe extraction of mycotoxins and veterinary drugs by response surface methodology for application to egg and milk. *Journal of Chromatography A* [online]. 1532, 20–29. ISSN 0021-9673. Dostupné z: doi:10.1016/j.chroma.2017.11.050