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Fusarium toxins in feeding plants: Peculiarities in T-2 toxin and diacetoxyscirpenol contents

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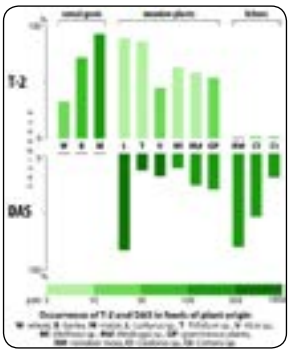
Among the mycotoxins produced by Fusarium, the largest group is the trichothecenes of which Di-Acetoxy-Scirpenol (DAS) and T-2 toxin (T-2) are the most important ones. DAS may occur along with T-2 and causes similar symptoms of intoxication. Researchers have reported that the both metabolites could be formed by some widespread fungal species though in unequal degree. However, screening data on the mutual occurrence of the toxins in feeds is still very limited. The purpose of this study is to evaluate levels and content of the both toxins in grain of cultivated cereals, meadow gramineous plants and the legumes eaten by animals at pastures, and the lichens which are the main diet for reindeers. Quantitative measurements of T-2 and DAS were made with the use of specific kits of ELISA reagents at detection limits of 4 ppb and 50 ppb respectively. T-2 was found to be a single contaminant in wheat, barley and maize grain and no cases of DAS detection were revealed. In contrast, in lichens T-2 was very rare but DAS occurred enough frequently. The collections of the ground parts of wild-growing grasses belonging to genera *Lathyrus* (peavines), *Trifolium* (clovers), *Vicia* (vetchs), *Melilotus* (sweetclovers) and *Medicago* (alfalfa) as well as mixtures of various gramineous grasses had a common feature with a high prevalence of both toxins and intensive accumulation of DAS, up to 1000 ppb. Thus, one of the causes of intoxication of livestock on grazing can be extensive combined contamination of meadow plants with DAS and T-2. Risks for reindeer may be associated with a sufficiently high content of DAS in lichens. The reasons for the differences in the prevalence of these toxins in the studied types of forages are still unclear and are apparently, related to the peculiarities of their mycobiota composition.



Recent Publications

1. Thrane U, Adler A, Clasen P E, Galvano F, Langseth W, Lew H, Logrieco A, Nielsen K F and Ritieni A (2005) Diversity in metabolite production by *Fusarium langsethiae, Fusarium poae*, and *Fusarium sporotrichioides*. International Journal of Food Microbiology 95:257–266.
2. Yli-Mattila T, Ward T J, O'Donnell, Proctor R B, Burkin A A, Kononenko G P, Gavrilova O P, Aoki T, McCormick S P and Gagkaeva T Yu (2011) *Fusarium sibiricum* sp. nov, a novel type A trichothecene-producing Fusarium from northern Asia closely related to *F. sporotrichioides* and *F. langsethiae.* International Journal of Food Microbiology 147:58–68.
3. Schollenberger M, Müller H M, Rüfle M, Suchy S, Plancr S and Drochner W (2005) Survey of *Fusarium* toxins in foodstuffs of plant origin marketed in Germany. International Journal of Food Microbiology 97(3):317–326.
4. Fuchs E, Rabus B, Handl J and Binder E M (2003) Type A-trichothecenes – quantitative analysis using LC-MS and occurrence in Austrian maize and oats. Mycotoxin Research 19(1): 56–59.

Biography

Galina P Kononenko is a Head of Mycotoxicology Laboratory at All-Russian Research Institute of Veterinary Sanitation, Hygiene and Ecology (Moscow), Professor received a diploma of a Doctorate of Biology in 2005. Her scientific work is devoted to the studies of secondary metabolites of microscopic fungi. She is an author of more than 50 international scientific publications.

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