Evaluation of the effect of mycotoxin binders in animal feed on the analytical performance of standardised methods for the determination of mycotoxins in feed

Abstract:
Recently, the use of substances that can suppress or reduce absorption, promote the excretion of mycotoxins or modify their mode of action in feed, so-called mycotoxin binders, has been officially allowed in the European Union as technological feed additives. The influence of the addition of mycotoxin binders to animal feed on the analytical performance of the official methods for the determination of mycotoxins was studied and the results are presented. Where possible standardised methods for analysis were applied. Samples of 20 commercial mycotoxin binders were collected from various companies. The following mycotoxins were included in the study: aflatoxin B1, deoxynivalenol, zearalenone, ochratoxin A, fumonisins B1 and B2, T-2 and HT-2 toxins. A binder (or binders combined in a group) was mixed with feed material containing the mycotoxin, and the feed material was analysed. For data evaluation, the mean values were compared by Student’s t-test (an independent two-sample t-test with unequal sample sizes and equal variance). The repeatability standard deviation of each method was used as an estimate of method variability. No significant differences (p<0.05) in mycotoxin levels between binder-free material and the material containing different binders were found. Further, the possible effects of binder addition in combination with processing (pelletising) on the amount of aflatoxin B1 determined in feed were studied. Three commercial mycotoxin binders containing hydrated sodium calcium aluminosilicate (HSCAS) as the main component were used in these experiments. Feed samples with and without mycotoxin binders were pelletised with and without steam treatment. After pelletising, materials were analysed for AFB1. Only the combination pelletising and a mixture of binders added at a total level of 1.2% had a significant effect (41% reduction) on the amount of AFB1 determined.

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Authors:
KOLOSOVA A.
STROKA Joerg

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