1 Development of a simultaneous quantification method for ten trichothecenes including deoxynivalenol-3-glucoside in feed

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An analytical method for the simultaneous quantitation of ten trichothecenes of type A (HT-2 toxin, T-2 toxin, diacetoxyscirpenol, and neosolaniol) and type B (3-acetyldeoxynivalenol, 15-acetyldeoxynivalenol, deoxynivalenol, deoxynivalenol-3-glucoside, nivalenol, and fusarenon-X) in feed has been developed using liquid chromatography with tandem mass spectrometry. Mycotoxins extracted twice from samples using aqueous acetonitrile were purified using a multifunctional clean-up column, followed by a phospholipid removal column. Trichothecenes were analysed using liquid chromatography atmospheric pressure chemical ionization tandem mass spectrometry. The extraction efficiency of the mycotoxins and the repeatability of some were improved by repeated extractions. Ionization enhancement (signal enhancement) of some mycotoxins was improved by using the phospholipid removal column at the clean-up step. Spike and recovery tests of trichothecenes were conducted on maize, barley, soybean meal, rapeseed meal, and formula feeds (for starting broiler chicks, suckling pigs, and beef cattle). The mean recovery values were 70.6-119% with relative standard deviations < 17%. The limit of quantification and the limit of detection of our method were 20 and 6 μg/kg, respectively, for 3-acetyldeoxynivalenol and 15-acetyldeoxynivalenol; 10 and 3 μg/kg, respectively, for T-2 toxin, deoxynivalenol, and fusarenon-X; and 5 and 2 μg/kg, respectively, for nivalenol and the remaining mycotoxins.

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