Detection of aflatoxins, trichothecenes and zearalenone in food and animal feed by reversed phase HPLC and SPE

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Acta Horticulturae 963: 119-128. 2012.

Abstract

Aflatoxins are mycotoxins produced by certain fungi such as *Aspergillus*, grown at high levels of temperature and humidity. Aflatoxins are genotoxic, carcinogenic substances and could be present in a high number of foodstuffs. For this type of substances there is no limit under which no negative effects are observed. Hence, the tolerable daily intake cannot be defined. The current scientific and technical knowledge as well as the improvement of the manufacturing and storage practices does not mean that the growth of these fungi will stop and as a consequence the presence of aflatoxins in foods cannot be eradicated completely. Hence, it is recommended that minimum values should be determined. Mycotoxins in food and animal feed, is a major problem concerning the safety of the animal stock as well as the public health. It is well known that mycotoxins are responsible for carcinogenic effects in animals and humans. The mycotoxin analysis involves the isolation of the toxin from the sample followed by suitable chromatographic determination. Amongst many procedures of mycotoxin isolation from samples, the most popular is a variation of solid phase extraction technique, using MycoSep extraction columns (Romer Labs Inc.). The most common mycotoxins inquired in fodders are aflatoxins, trichothecenes and zearalenone. This study gives a statistical evaluation of two years' results. From this evaluation it is clearly shown that most of the analyzed animal feed samples were found infected with trichothecenes (approx. 70%) and zearalenone (approx. 45%). In soya, barley and mixed feed samples trichothecenes were identified in almost all samples. On the other hand, only two samples out of 75 analyzed for aflatoxins, were found positive. Nevertheless constant monitoring of aflatoxins is essential, due to their high toxicity.