

RICERCHE EFFETTUATE

IGIENE DEGLI ALIMENTI AD USO ZOOTECNICO

Bello[°]C, Reverberi M, Fanelli C, Fabbri A, Scarpari M, Dall'Asta C, Righi F, Angelucci[°]A, Bertocchi[°]L

Aflatoxin control in feed by *Trametes versicolor*

X National Congress of Food Chemistry : 6th-10th July 2014 Firenze / [s.l. : s.n., 2014]. - p 70. - 1 bib ref [Nr. Estr. 6021]

National Congress of Food Chemistry (10. : Firenze : 6th-10th July 2014)

Aspergillus flavus are well known widely diffused fungi able to contaminate, already in the field, food commodities like seeds. Once the crop is contaminated, these fungi can develop and produce aflatoxins, secondary metabolites which are carcinogenic, teratogenic and mutagenic for animals and humans. These mycotoxins can enter the human food chain by the direct ingestion of contaminated seeds or processed food and by the consumption of animal products coming from livestock fed with contaminated silages. The requirement of products with low impact on the environment and on human health, able to control aflatoxin production, has increased. Several papers report the use of extracts from fungi to inhibit fungal development and mycotoxin production [1]. In this work the effect of bioactive compounds produced by the basidiomycete fungus *T. versicolor* on the aflatoxin production by *A. flavus* both in vitro and in maize, was investigated. The goal was to propose an eco-friendly tool for a significant control of aflatoxin production, in order to obtain feedstuffs and feeds with a high standard of quality and safety to enhance the wellbeing of dairy cows. The presence of *T. versicolor*, grown on sugar beet pulp, was able to inhibit the production of aflatoxin B1 in maize by *A. flavus*. Furthermore, treatment with culture filtrates of *T. versicolor* containing ligninolytic enzymes, showed a significant reduction of the content of aflatoxin B1 in contaminated maize. Moreover, treated and control maize samples were also compared under in vitro ruminal digestive condition to simulate the possible releasing of aflatoxins upon cow's digestion. Finally, the effect of the bioactive compounds has been verified in vivo. Feed, contaminated with aflatoxin B1 and treated with *T. versicolor* has been administered to dairy cows and the treatment effect assessed by examining carry-over of aflatoxin B1 to Aflatoxin M1 in milk.

Biancardi[°]A, Dall'Asta C

A simple and reliable liquid chromatography-tandem mass spectrometry method for the determination of aflatoxin B1 in feed

Food Addit Contam Part A. - Vol. 31 no 10 (2014). - p 1736-1743. - 15 bib ref [Nr. Estr. 5881]

A chromatographic method is proposed for the analysis of aflatoxin B1 in cereal-based feed, particularly targeted to dairy animals. The method is based on a solid-liquid extraction followed by a Mycosep 226 clean-up. Accuracy and precision were established at the LOQ (1 µg kg⁻¹) with a spiked sample as well as with two other different naturally contaminated reference materials. The mean overall recovery (n = 18) was 100.8%, with a confidence interval of 2.7% and a CV% of 5.5%. The performance of the proposed method was compared with the AOAC method based on the use of immunoaffinity chromatography columns, proving that it could be considered a valid alternative. Moreover, the sample preparation is very simple and straightforward, potentially being applicable as a high-throughput method. On account of its simplicity and low cost, the method may be applied to the analysis of a large number of samples in the occasion of outbreaks of large-scale contamination.

Lorenzi[°]V, Angelone[°]B, Ferretti[°]E, Anelli S, Sale VM, Bertocchi[°]L

PCDD/F and PCB in the food web : focus on feed

Dioxin : 34th International Symposium on Halogenated Persistent Organic Pollutants : August 31st - September 5th 2014 Madrid, Spain : program book / editor in chief, Begoña Jiménez. - [s.l. : s.n.], 2014. - 4 p (Oral presentation 675) [Nr. Estr. 5839]

International Symposium on Halogenated Persistent Organic Pollutants (34th : Madrid, Spain : August 31st - September 5th 2014)

Scarpari M, Bello°C, Pietricola C, Zaccaria M, Bertocchi°L, Angelucci°A, Ricciardi MR, Scala V, Parroni A, Fabbri AA, Reverberi M, Zjalic S, Fanelli C

Aflatoxin control in maize by *Trametes versicolor*

Toxins. - Vol. 6 (2014). - p 3426-3437. - 23 bib ref [Nr. Estr. 5929]

Aspergillus flavus is a well-known ubiquitous fungus able to contaminate both in pre- and postharvest period different feed and food commodities. During their growth, these fungi can synthesise aflatoxins, secondary metabolites highly hazardous for animal and human health. The requirement of products with low impact on the environment and on human health, able to control aflatoxin production, has increased. In this work the effect of the basidiomycete *Trametes versicolor* on the aflatoxin production by *A. flavus* both in vitro and in maize, was investigated. The goal was to propose an environmental loyal tool for a significant control of aflatoxin production, in order to obtain feedstuffs and feed with a high standard of quality and safety to enhance the wellbeing of dairy cows. The presence of *T. versicolor*, grown on sugar beet pulp, inhibited the production of aflatoxin B1 in maize by *A. flavus*. Furthermore, treatment of contaminated maize with culture filtrates of *T. versicolor* containing ligninolytic enzymes, showed a significant reduction of the content of aflatoxin B1.