

عنوان مقاله:

Molecular identification of aflatoxigenic *Aspergillus* species in feedstuff samples

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خلاصه مقاله:

Background and Purpose: Aflatoxins are naturally produced by some species of *Aspergillus*, such as *A. flavus* and *A. parasiticus*. Aflatoxins reportedly have carcinogenic effects on human, poultry, and livestock, and therefore could be linked to severe human illnesses. Aflatoxin biosynthesis pathway involves different clustered genes, including structural, regular, and unassigned genes. The present study was conducted to detect aflR, aflP, and aflD as three important genes contributing to aflatoxin B₁ production cycle in *Aspergillus* species isolated from the feedstuffs of animal husbandry. **Materials and Methods:** This study was conducted on ۲۵ isolates of *A. flavus*, *A. parasiticus*, *A. nomius*, and *A. nidulans*, isolated from animal feedstuff as a test group. The test group was compared with two standard strains (i.e., *A. flavus* and *A. parasiticus*) as aflatoxigenic reference organisms and negative controls (i.e., *A. fumigatus*, *A. fusarium*, and *A. penicillium*) in terms of the presence of aflR, aflP, and aflD genes using polymerase chain reaction (PCR). The determination of the toxigenicity and aflatoxin production of isolated *Aspergillus* species was accomplished using thin-layer chromatography (TLC) and high-performance liquid chromatography (HPLC). **Results:** The results obtained by the amplification of the selected genes by PCR method for the detection of aflatoxigenic *Aspergillus* species were significantly correlated with TLC and HPLC results. Accordingly, all samples, having positive results for aflatoxin B₁ production in TLC and HPLC, were able to show the amplification of three target genes. However, ۴ cases out of ۶ (۶۶%) non-aflatoxigenic isolates were positive for three or two genes. **Conclusion:** Based on the findings, the molecular detection of aflatoxin biosynthesis genes (i.e., aflP, aflD, and aflR) could be considered as a quick and reliable method for the detection of aflatoxigenic *Aspergillus*. Furthermore, this method could be useful in planning and implementing strategies targeted toward improving the safety of human or animal food.

کلمات کلیدی:

Aflatoxigenic, *Aspergillus*, HPLC, PCR, TLC

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