عنوان مقاله:

Expression of aflR, veA and laeA as regulators of aflatoxins and cyclopiazonic acid biosynthesis pathway in Aspergillus flavus

محل انتشار:

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خلاصه مقاله:

In this study, the production of aflatoxin B۱ (AFB۱) and cyclopiazonic acid (CPA) was investigated in toxigenic and non-toxigenic Aspergillus flavus with respect to expression of aflR, veA and laeA genes that are involved to toxins production. A. flavus strains were cultured in YES broth at ۲۸ ℃ for ۴ days and the presence of (AFB۱) and (CPA) was confirmed and measured by TLC and HPLC. The expression of aflR, veA and laeA was compared in toxigenic and non-toxigenic strains after cDNA preparation by Real-Time PCR. The results showed that the highest concentrations of AFB۱ and CPA were ۹۴۵۰.۵۶ and ۴۰۳.۸۵μg/g fungal dry weight, respectively. A. flavus isolates based on the ability for producing mycotoxins were divided into ۴ groups including, AFB۱ and CPA producer (۹۴۵۰.۵۶ and ۳۷۷.۵۲ μg/g; chemotype I), AFB۱ producer (۲۰۲۴.۸۰ μg/g; chemotype II), CPA producer (۴۰۳.۸۵ μg/g; chemotype III), and non-producer (chemotype IV). The results of the analysis of aflR, veA and laeA gene expression between toxigenic and non-toxigenic A. flavus isolates did not show any significant correlation between the expression of these genes and AFB۱ and CPA production among the tested strains in our study. Since, the incidence of AFB۱ and CPA producing Aspergillus in environmental pollution is a potential threat to public health, finding the role of related genes of the biosynthetic pathway of aflatoxin and CPA in determining the mycotoxins producing A. flavus is recommended in a larger population for different geographic locations.

کلمات کلیدی:

Aspergillus flavus, Aflatoxin B۱ (AFB۱), Cyclopiazonic acid (CPA), aflR, veA, laeA, Gene expression