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Original Article

Detection of Aflr Gene and Toxigenicity of Aspergillus flavus Group Isolated from Patients with Fungal Sinusitis

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Abstract:

Background: *Aspergillus flavus* is the second most important *Aspergillus* species causing human infections particularly fungal sinusitis. Since little is known about aflatoxin producing ability of clinical isolates, this study was undertaken to detect the aflatoxigenic isolates amongst these isolates.

Methods: A total of 23 isolates of *A.* spp. which were recovered from patients proved to have fungal sinusitis by morphological and histological methods and also 5 additional aflatoxigenic and non-aflatoxigenic reference of *A. flavus* group strains were studied. The isolates were identified morphologically using Czapek Yeast Agar and *A. flavus* and *parasiticus* Agar (AFPA). Aflatoxin producing ability of the isolates was confirmed by Thin Layer Chromatography. Existing of *aflR* gene the regulatory gene in aflatoxin biosynthesis, were studied in all isolates by PCR method.

Results: All twenty three *Aspergillus* isolates confirmed as *A. flavus* group by their macroscopic and microscopic features. One clinical isolate confirmed as *A. oryzae* by mycological methods. *A. oryzae* as well as *A. flavus* JCM2061 and NCPF2008 and 3 clinical isolates were not able to produce orange pigment on AFPA. From total of 23 isolates 4 (17.4%) confirmed to be aflatoxigenic by TLC method. A banding pattern which matched to *aflR* primers was amplified with approximate size of 800 bp in all 23 clinical *A. flavus* isolates. A larger banding pattern 1050 bp was revealed in clinical isolate; strain no.20 as well.

Conclusion: Some clinical sinus isolates are able to produce aflatoxin and all of studied isolates including; *A. oryzae, A. parasiticus* and *A. sojae* were able to amplify *aflR* gene under our laboratory conditions.

Keywords:

Aspergillus flavus , aflR , *Aflatoxigenicity* , *Rhinosinusitis* , *AFPA*

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