

Comparison of the aflatoxin B₁ production pattern in fungal biomass and growth medium in toxigenic *Aspergillus* species of northern isolates of Iran

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Abstract

Aflatoxin is the most economically important mycotoxin in the world. The most toxic form of aflatoxin is aflatoxin B₁. It is one of the few fungal toxins that is regulated by the US food and drug administration; moreover, compared with other mycotoxins, more is known about its biology and biosynthesis. In the present study, our aim was to detect the ability of aflatoxin B₁ to be produced in different *Aspergillus* species that have been isolated from agro-ecological zones and processing plants in the North of Iran. The concentration of AFB₁ in the samples was investigated by competitive enzyme-linked immunosorbent assay (ELISA). Also, through using the ELISA method, the aflatoxin B₁ production pattern was compared between fungal biomass and growth medium in toxicogenic isolates. The results showed that all of the studied *Aspergillus* species isolates tended to produce aflatoxin B₁. Although there was a statistically significant difference in the mean of aflatoxin B₁ in growth medium and cell extract in several species, in *A. flavus*, *A. parasiticus*, *A. sojae*, *A. terreus*, *A. ostianus*, *A. carbonarius*, *A. wentii*, storing the toxin in fungal cell was more than that of releasing toxin in matrix culture medium. In the other isolates including *A. niger*, *A. foetidus* and *A. ocraceus*, export of toxin was more than that of cell storage. We concluded that toxicogenic isolates of *Aspergillus* spp can be found in all the studied geographic areas of Northern Iran. Although the behavior of species in releasing of aflatoxin into the growth environment was different, we hypothesized that it depends on different mechanisms that effect export toxin into the external environment.

Key words: Aflatoxin, *Aspergillus*, Fungal biomass, Growth medium, Toxigenic

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