

عنوان مقاله:

Effects of thiamine on growth, aflatoxin production, and aflR gene expression in *A. parasiticus*

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خلاصه مقاله:

Background and Purpose: Mycotoxins are secondary fungal metabolites with a very high diversity that are produced by some species of *Aspergillus* which frequently leads to contaminate food and agricultural products. Recently, elimination of aflatoxin contamination in food and feed has been considered by scientists worldwide. Although, the antibacterial and antifungal effects of vitamins as natural compounds have been proven, the mechanism of vitamins effect on *Aspergillus parasiticus* growth and aflatoxin production is not yet clear. In this study, the effect of thiamine (vitamin B₁) was studied on *Aspergillus parasiticus* growth, aflatoxins production and the aflR gene expression. **Materials and Methods:** A standard strain of *Aspergillus parasiticus* was applied for performing antifungal susceptibility test in different concentrations of thiamine. Antifungal susceptibility test was performed according to CLSI M38-A2 document. The concentration of aflatoxin was determined by HPLC. Moreover, the quantitative changes in the aflR gene expression were analyzed by Real Time PCR method. **Results:** The minimum inhibitory concentration was yielded as > 500 mg/ml. However, HPLC analysis results showed that aflatoxin production reduced in samples treated with 500 mg/ml of thiamine. In addition, the level of aflR gene expression was significantly reduced after treating with 500 and 250 mg/ml of vitamin B₁. **Conclusion:** Based on the obtained results, thiamine could not inhibit the fungal growth completely. However, the rate of aflR gene expression and aflatoxin production was significantly reduced after fungal treating with thiamine. Consequently, using natural compounds such as vitamins may be regarded as potential antitoxic agent in food industry and the industries related to agriculture.

