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Antifungal and anti-aflatoxigenic activity of bacteria isolated against *Aspergillus parasiticus* NRRL 2999

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In this study, bacteria were isolated from soils of Howze-Soltan playa in Iran with special attention to their biological activity against an aflatoxigenic *Aspergillus parasiticus* NRRL 2999. Bacteria were isolated from a total of 20 saline soils using specific culture media and identified by 16S rRNA sequencing in neighbor-joining tree analysis. Antifungal and anti-aflatoxigenic activities of the bacteria were screened by a non-mutant *A. parasiticus* NRRL 2999 using visual agar plate assay and confirmed by high-performance liquid chromatography. Among a total of 177 bacteria belonging to 11 genera, 121 isolates (68.3%) inhibited *A. parasiticus* growth and/or aflatoxin production. The most potent inhibitory bacteria of the genera *Bacillus*, *Paenibacillus* and *Staphylococcus* were distributed in three main phylogenetic clusters as evidenced by 16S rRNA sequence analysis. *A. parasiticus* growth was inhibited by 0.7–92.7%, while AFB1 and AFG1 productions were suppressed by 15.1–98.9 and 57.0–99.6%, respectively. Taken together, bacteria identified in this study may be considered as potential sources of novel bioactive metabolites as well as promising candidates to develop new biocontrol agents for managing toxigenic fungi growth and subsequent aflatoxin contamination of food and feed in practice.

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