Inhibition of *Aspergillus parasiticus* growth and aflatoxin production by antagonistic bacteria isolated from soils of pistachio orchards

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Abstract

In the present study, bacteria isolated from soils of pistachio orchards of Damghan-Iran were evaluated for their inhibitory activity toward *Aspergillus parasiticus* growth and aflatoxin production. Antagonistic activity of the isolated bacteria was screened against a non-aflatoxigenic nor-mutant of *A. parasiticus*, which accumulated the pigmented aflatoxin precursor norsolorinic acid (NOR) under conditions conductive to aflatoxin production. Using visual plate assay in co-culture experiments on glucose yeast extract agar, antagonistic bacteria showed inhibition of *A. parasiticus* growth and/or NOR accumulation. Of 290 bacterial strains screened from pistachio orchards, 37 strains inhibited both fungal growth and NOR accumulation, 22 strains inhibited fungal growth and 9 strains inhibited only NOR production. Remaining 232 strains were not inhibitory for both fungal growth and NOR production. Molecular and physiological identification of the bacterial strains indicated that the predominant genera isolated were *Bacillus* and *Pseudomonas*. Our results demonstrated the presence of antagonistic bacteria in soils of pistachio orchards and their potential in developing individual biocontrol agents for simultaneous control of the growth and aflatoxin production by *A. parasiticus*.