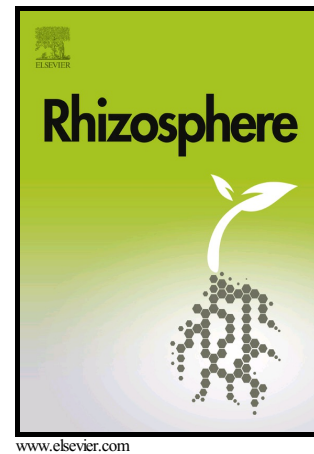


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A novel strain of *Pseudomonas* inhibits *Colletotrichum gloeosporioides* and *Fusarium oxysporum* infections and promotes germination of Coffee

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Abstract

This study aimed to screen phytobeneficial *Pseudomonas* sp. from the rhizosphere of *Coffea arabica* L. capable of antagonizing *Colletotrichum gloeosporioides* (Penzig) Sacco and *Fusarium oxysporum* Schlecht. A total of 40 *Pseudomonas* were isolated and checked for their antagonistic activity by dual culture techniques. The isolate named as PT11 showed maximum inhibition of *Colletotrichum gloeosporioides* (70%) and *Fusarium oxysporum* (72%) ($P < 0.05$). PT11 was functionally characterized for its direct and indirect plant growth-promoting activities. PT11 showed a positive test for the production of phytohormones (IAA and GA3), zinc solubilization, siderophores production, and lytic enzymes. Treatment of *Coffea arabica* L. seeds with PT11 increased germination, reduced disease incidence due to infection of the fungal pathogen, and increased activities of defense-related enzymes. Based on the 16s rRNA gene sequence analysis, chemotaxonomic identification, phylogenetic analysis and biochemical characteristics, the bacterium PT11 showed the highest similarity with *Pseudomonas putida* group. *Pseudomonas* PT11 is capable of controlling pathogenesis of *Colletotrichum gloeosporioides* and *Fusarium oxysporum* through direct antagonism and boosting host immunity through ISR. Furthermore, *Pseudomonas* PT11 can be used to improve coffee germination.

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