



Diversity and potential application of endophytic bacteria in ginger

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ABSTRACT. Here, 248 endophytic bacterial strains were isolated to assess the distribution and population diversity of endophytic bacteria in ginger plants. A total of 10.4×10^4 to 20.2×10^4 CFU/g fresh weight endophytic bacteria of different growth stages were isolated. Maximum bacterium numbers were obtained at the seedling stage. A total of 107 functional strains were screened, including 17 antibacterial strains and 90 indole acetic acid-producing strains. Based on 16S rDNA sequence restriction fragment length polymorphism and 16S rDNA sequences, these 107 strains were mapped and grouped into 16 genera. *Bacillus* and *Pseudomonas* were the dominant genera; however, the bacteria belonged to a tremendous range of genera, with the highest species richness being observed at the seedling stage. Sixteen strains exhibited antimicrobial activity against *Pythium myriotylum* Drechsler, while 7 strains exhibited antimicrobial activity against *Phyllosticta zingiberi* Hori. *Bacillus* was the dominant antibacterial strain. *Pseudomonas fluorescens*, *B. megaterium*, and *Enterobacter ludwigii* produced remarkably high levels of IAA. Only a few endophytic bacterial

strains were inhibited in fresh ginger juice. Most of these strains were present during seedling stage, including *Roseateles depolymerans*, *Chryseobacterium taiwanense*, *E. ludwigii*, *Agrobacterium larrymoorei*, *P. fluorescens*, and *Bacillus amyloliquefaciens*. This study indicates that the community of endophytic bacteria in ginger changes with the synthesis of antibacterial substances.

Key words: Endophytic bacteria; IAA; Ginger; Antifungal activity