

Antifungal activity of *Serratia rubidaea* Mar61-01 purified prodigiosin against *Colletotrichum nymphaeae*, the causal agent of strawberry anthracnose

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Abstract

Strawberry anthracnose, caused by *Colletotrichum nymphaeae* is an important disease of strawberry. In this study, an endophytic bacterium isolated from the stem of *Fragaria × ananassa* cv Paros and identified as *Serratia rubidaea* strain Mar61-01 based on phenotypic, biochemical characteristics and molecular phylogenetic analysis. Antagonistic activities of this endophytic bacterium against *C. nymphaeae* were investigated under in vitro, in vivo and greenhouse conditions. The strain Mar61-01 reduced mycelial growth and conidial germination of *C. nymphaeae* in in vitro tests. Furthermore, it reduced disease severity on inoculated strawberry fruits and seedlings compared with uninoculated control. In addition, the strain Mar61-01 produced prodigiosin pigment. The pigment was purified by thin layer chromatography and its chemical structure was characterized by FT-IR and NMR (400 MHz) spectra. The results indicated that prodigiosin is a key feature in biocontrol of *C. nymphaeae*. The inhibition growth of *C. nymphaeae* under in vitro, in vivo, and greenhouse conditions showed that *S. rubidaea* Mar61-01 has the potential for managing of strawberry anthracnose.