

عنوان مقاله:

Biocontrol potency of *Bdellovibrio bacteriovorus* toward exo-biopolymer producing phytopathogens : in vitro and in vivo assessments

محل انتشار:

بیست و چهارمین کنگره بین المللی میکروب شناسی ایران (سال: 1402)

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خلاصه مقاله:

BACKGROUND AND ABJECTIVE *Bdellovibrios* are predatory bacteria that invade other live Gram-negative bacterial cells for growth and reproduction. They have recently been considered as potential living antibiotics and biocontrol agents. In this study, the predatory activity and biocontrol potency of *Bdellovibrio bacteriovorus* strain SOIR-۱ against *Pantoea* sp. strain BCCS and *Xanthomonas campestris*, two exobiopolymer-producing phytopathogens, was evaluated. **MATERIALS AND METHOD** Plaque formation assays and lysis analysis in the broth co-cultures were used for the in vitro evaluation of bacteriolytic activity of strain SOIR-۱. The in vivo biocontrol potential of strain SOIR-۱ was evaluated by pathogenicity tests on the onion bulbs and potato tuber slices. The phytopathogens were also recovered from the infected plant tissues and confirmed using biochemical tests and PCR-based ۱۶S rRNA gene sequence analysis. **RESULTS AND DISCUSSION** Typical bdellovibrios plaques were developed on the lawn cultures of *Pantoea* sp. BCCS and *X. campestris*. The killing rate of strain SOIR-۱ toward *Pantoea* sp. BCCS and *X. campestris* was ۸۴.۳% and ۷۶.۳%, respectively. Exo-biopolymers attenuated the predation efficiency of strain SOIR-۱ up to ۱۰.۲-۱۸.۲% (*Pantoea* sp. BCCS) and ۱۲.۲-۱۷.۳% (*X. campestris*). The strain SOIR-۱ significantly reduced rotting symptoms in the onion bulbs caused by *Pantoea* sp. BCCS (۶۹.۰%) and potato tuber slices caused by *X. campestris* (۷۳.۱%). **CONCLUSION** Although more field assessments are necessary, strain SOIR-۱ has the preliminary potential as a biocontrol agent against phytopathogenic *Pantoea* sp. BCCS and *X. campestris*, especially in postharvest storage. Due to the particular physicochemical properties of evaluated exobiopolymers, they can be used in the designing encapsulation systems for delivery of bdellovibrios.

کلمات کلیدی:

Bdellovibrio. Lytic activity. Phytopathogens. Exo-biopolymer. Biological control. Pathogenicity tests

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