

园艺—研究报告

内生放线菌Fq24的拮抗筛选及其代谢产物生物活性研究

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摘要:

通过对番茄内生放线菌的拮抗筛选和其代谢产物生物活性的研究, 为防治番茄灰霉病寻找新的生防菌源, 并探索植物内生放线菌的生防机理。从健康番茄植株上分离到9株放线菌。通过平板对峙培养和发酵液抑菌活性测定、筛选对番茄灰霉菌有拮抗作用的菌株。以番茄种子及幼苗生长情况, 防御酶活性变化, 盆栽试验对其代谢产物的促生作用、抗病诱导作用、防病作用等生物活性进行了研究。结果表明: (1) 菌株Fq24对番茄灰霉菌的抑菌圈半径大于10 mm, 其发酵液的抑制作用可达到68.4%。(2) 中浓度的Fq24发酵液促进根茎的生长, 幼苗的干、鲜重及株高最大为对照的168.35%、286.30%和70.79%, 均为显著增加。(3) 番茄幼苗体内防御酶活性明显提高, POD、SOD活性最大增加为71.3%和62.3%。(4) 喷施Fq24发酵液可明显降低灰霉病的发病率, 取得82.14%的防效。Fq24是株有拮抗作用的菌株, 其代谢产物能显著促进番茄种子和幼苗生长; 诱导番茄体内抗性酶活性提高, 增加植物抗性; 明显降低发病率, 防病效果好。

关键词: 生物活性

Antagonistic Screening of Endophytic Actinomyces Fq24 and Studies on Bioactivity of Its Metabolites

Abstract:

In order to look for new resources of biocontrol on tomato gray mould and explore biocontrol mechanism of plant endophytic actinomyces, antagonistic screening of tomato endophytic actinomyces and activities of its metabolites were studied. Nine endophytic actinomyces were isolated from healthy tomatoes. Antagonistic strain against *Botrytis cinerea* Pers. was screened out through dual-culture and inhibitory activity test. Bioactivities of metabolites on promoting growth, induced resistance and disease control were studied through growth of tomato seeds and seedlings, changes of resistant enzymes, and pot test. The results were as follows. (1) Inhibit radius of strain Fq24 against *B. cinerea* was above 10 mm. Antagonistic effect of fermentation solution reached 68.4%. (2) Fermentation solution could promote growth of root and stem in middle concentration. Dry weight, fresh weight and height respectively increased by 168.35%, 128.57% and 70.79% in seedlings. (3) Activities of superoxide dismutase (SOD) and peroxidase (POD) in tomato plants treated with Fq24 fermentation solution obviously increased. The largest increasing change rates of POD and SOD activities were 71.3% and 62.3%. (4) Spraying Fq24 fermentation solution could significantly reduce tomato gray mould occurrence, attain the obvious control effect reaching 88.14%. Fq24 was an antagonistic strain, whose metabolites could significantly promote tomato seeds germination and seedlings growth, induce POD and SOD activities to improve, significantly reduce disease occurrence, and attain the obvious control effect.

Keywords: bioactivity

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