

## 烟草黑胫病拮抗菌的筛选及其生物效应

Screening of antagonist against tobacco black shank and biological effect of the strain

中文关键词: [烟草黑胫病](#) [微生物有机肥](#) [多粘类芽孢杆菌](#) [烟草疫霉](#)

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### 中文摘要:

烟草黑胫病是烟草生产中危害最严重的土传病害之一,生物防治具有抗病和环保的作用,获得高效拮抗菌株是进行生物防治研究的基础。本研究采用平板对峙法,在烟草黑胫病发生严重的田块中选取健康烟株,从其根际土壤中分离筛选到12株对烟草黑胫病病原菌 *Phytophthora parasitica var. nicotianae* 具有拮抗效果的菌株,抑菌率59.4%~71.1%。选择抑菌率最高的C-5菌株进行试验。经鉴定C-5菌株为多粘类芽孢杆菌(*Paenibacillus polymyxa*)。抗菌谱试验结果表明:C-5菌株不仅对黑胫病病原菌有较强的拮抗作用,同时对甜瓜、黄瓜枯萎病病原菌和辣椒疫病病原菌也具有拮抗作用。苗期盆栽试验结果表明:利用C-5菌株发酵制备的微生物有机肥能抑制烟草黑胫病的发生,苗期防治率达80%。本文首次报道了多粘类芽孢杆菌菌株对烟草疫霉有拮抗作用。

### 英文摘要:

Tobacco black shank is one of the most serious soil-borne diseases in tobacco production. Biological control has been proved effective and environment-friendly, but screening of antagonists against pathogens is the basic work in bio-controlling. Twelve strains of bacteria antagonist against *Phytophthora parasitica var. nicotianae* were isolated by using the plate-confrontation method from rhizosphere soils under healthy tobacco plants in tobacco fields seriously infected with the pathogen. The averaged inhabiting rates of the antagonists ranged from 59.4% to 71.1%. The best performer Strain C-5, which was identified as *Paenibacillus polymyxa* (C-5) based on biochemical tests and 16S rRNA sequence similarity, was then selected for further experiments. Results from antibiotic spectrum experiments show that Strain C-5 was also effective in inhibiting other plant pathogen such as *Fusarium osyoporunm f. sp melonis*, *Fusarium osyoporunm f. sp cucumerinum* and *P. capsici*. Pot experiments show that application of bio-organic fertilizer supplemented with Strain C-5 suppressed the incidence of tobacco black shank by 80% as compared with the control. To our knowledge, this is the first report on the microbiological antagonism of Strain *Paenibacillus* against *Phytophthora parasitica var. nicotianae*.

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