

Research Paper :

## Secondary metabolites of *Chaetomium globosum* used as antifungal against post harvest pathogens



NEETA SHARMA AND MADHU PRAKASH SRIVASTAVA

*International Journal of Plant Protection*, Vol. 4 No. 2 (October, 2011) : 353-358

See end of the article for authors' affiliations

Correspondence to :  
**MADHU PRAKASH SRIVASTAVA**

Department of Botany,  
Mycology and Plant  
Pathology Division  
University of Lucknow,  
LUCKNOW (U.P.)  
INDIA  
Email madhusrivastava  
2010@gmail.com

### SUMMARY

*Chaetomium globosum* strain F0140, which was isolated from *Butea monosperma*, has been identified as a potential antagonist of post-harvest pathogen. Production of antifungal compound by *Chaetomium globosum* and its role in suppression of test fungus *in vitro* has been evaluated. Bi-cultural test in laboratory showed that *C. globosum* gave the highest inhibition activity against test fungal pathogen. Inhibition of radial growth and clear zone of inhibition were 95.24 % and 0.35 cm observed, respectively. Crude extract also showed 95% inhibition at the 100 % concentration. The 10 h exposure of extract showed 100% inhibition of spore germination. Culture study showed the best medium for *C. globosum* was MYEA at 20°C in pH-6. This result showed high antifungal metabolite produce by isolate which gave maximum bioefficacy under laboratory conditions against post -harvested pathogen. Significance in antagonism between isolates and test pathogen was observed.

Sharma, Neeta and Srivastava, Madhu Prakash(2011). Secondary metabolites of *Chaetomium globosum* used as antifungal against post harvest pathogens. *Internat. J. Plant Protec.*, 4(2): 353-358.

### Key words :

*Chaetomium globosum*,  
Antagonism,  
Antifungal  
compound,  
Pathogen  
inhibition, Plant  
pathogen

### Received :

June, 2011

### Revised :

August, 2011

### Accepted :

September, 2011

Pathogenic fungi cause plant diseases that result in considerable losses to crop yields. Crop growers generally apply synthetic fungicides as preventive and therapeutic measures to control plant diseases. The indiscriminate and excessive use of a wide range of fungicides has led to environmental pollution and the production of resistant pathogen populations. Therefore, the demand for organic agricultural products cultivated without using any agricultural chemicals or chemical fertilizers is increasing. These events have caused many scientists to conduct research in to the integrated control of fungal diseases, including biological controls using antagonistic microorganisms and safer chemicals such as food preservatives and plant-derived products (Copping *et al.*, 2000, Istvan, 2002). Bio-control agents possess a number of important advantage over traditional and chemical pesticide which makes their commercial outlook particularly promising, as in general they were considered non-hazardous to humans and animals : biodegradable and environmental friendly, attack specific target

organism leaving other beneficial organism unaffected (Adaskaveg *et al.*, 2002).

An antagonist of several soil borne and airborne plant pathogenic fungi, as liquid cultures of *C. globosum* , which was isolated from barnyard grass, showed potent *in vivo* antifungal activity against rice blast (*Magnaporthe grisea*) and wheat leaf rust (*Puccinia recondita*), and moderate *in vivo* antifungal activity against tomato late blight (*Phytophthora infestans*). The production of antifungal substances by this organism is thought to play an important role in its antifungal activity.

Di Pietro *et al.* (1992) reported that the ability of *C. globosum* strains to produce chaetomin in liquid culture is correlated with their activity against damping off of sugar beet caused by *Pythium ultimum*. High antifungal metabolite production by *C. globosum* results in potent *in vivo* antifungal activity against spot blotch (*Cochliobolus sativus*) of wheat under laboratory and glasshouse conditions (Aggarwal *et al.*, 2004). Several antagonistic mechanisms may play a vital role in disease