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Research Article

EFFECT OF VARIOUS NITROGEN SOURCES ON THE GROWTH AND SPORULATION OF *COLLETOTRICHUM CAPSICI*

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ABSTRACT

11 Nitrogen sources were tested for their effect on growth and sporulation of Colletotrichum capsici. Out of 11 nitrogen sources tested, the pathogen produced maximum mycelial growth in peptone and followed by Ammonium phosphate, Ammonium oxalate, casein , sodium nitrate and in potassium nitrate shows least growth. Control without nitrogen supported no growth of pathogen.

INTRODUCTION

Chilli (*Capsicum annum* L.) is infected by different fungal pathogens, among them anthracnose is the most serious fungal disease found in India is caused by *Colletotrichum capsici* . In Maharashtra 8 to 27% loss (Dattar,1998), in Punjab (Rai and Chohan, 1966) reported that 10 to 30% loss, and in Karnataka 25 to 48% loss ((Ekbote,2001). All the fungi have specific requirement for their nutrition. Besides others nutrients carbon and nitrogen are the most important and essential elements for their growth, infection and reproduction. Therefore, the present investigation was carried out to study the utilization of various nitrogen sources by *Colletotrichum capsici*.

LITERATURE SURVEY

Purkayastha and Sengupta (1975) found peptone and potassium nitrate were favorable for both sporulation and mycelia growth of *C. gloeosporioides* penz. and sacc. Peptone was the best organic nitrogen source as it represents mixture of amino acid (Cochrane 1958), Ghosh (1969).In nitrogen sources peptone was found to be best for growth of Aspergillus flavus and *Aspergillus nidulans* (V. Jalander and B.D.Gachande), moderate sporulation found in urea (D.S. Thaware *et.al*. 2010). Similar results were also reported by Solanki *et.al*. (1974), Palarpawar and Ghurde (1997) and Kumar and Yadav (2005).

MATERIAL AND METHODS

The present in vitro study was conducted in Aerobiology Research Lab. M.G.Mahavidyalaya, Ahmadpur. Dist. Latur.(M.S.)

Isolation of pathogen

The pathogen was isolated from chilli fruits samples which was collected from local market. The identification was done on the basis of spores on fruiting structure under compound microscope with the help of manuals. (Subramanian 1971, Neergard and Mathur 1980, jha 1993, Mukadam *et. al*. 2006). After obtaining pure culture on potato dextrose agar (PDA) slants it is uses for further investigation.

In order to study the effect of various nitrogen sources on *Colletotrichum capsici* was carried out in GN media in following composition, Glucose (15gm), KH_2PO_4 (1.500gm), $MgSO_4$ (.750mg) and distilled water 1500ml. Without KNO_3 as nitrogen source. From this GN media 25ml was taken in each case of two sets of 100ml conical flasks and served as a control. GN media with 100ml was taken in another 150ml conical flask and add 250mg KNO_3 as a nitrogen source. Potassium nitrate in the GN media was replaced by various nitrogen sources like sodium nitrate, ammonium oxalate, ammonium chloride, ammonium sulphate, ammonium phosphate, ammonium nitrate, urea, peptone, casein and yeast

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extract .Each of them .250mg added in 100ml GN medium. Potassium nitrate with 25ml medium was poured in each case of two sets of 100ml conical flasks. This method same for other nitrogen sources. These conical flasks were autoclaved 15 lb pressure for 20 min. and pH was adjusted at 6.0 with the help of HCL/NAOH. Each flasks was inoculated with four drops of 7days old fungal spore suspension and incubated at 26 ± 2^0C for 10 days. Dry weight of the mycelium and sporulation and final pH were recorded. The degree of sporulation was measured on the basis of present in lower power field of compound microscope, poor(1-10), fair (11-20), good (21-30) and excellent (above 30). The growth of the fungus on different nitrogen sources has been termed as poor (below20mg), fair (21-40mg), good(41-60mg) and excellent (above60mg) on the basis of mycelial dry weight.

RESULT AND DISCUSSION

Eleven various nitrogen sources were tested in GN liquid medium to know their effect on the growth and sporulation of *Colletotrichum capsici*.

In the present investigation (Table no.1) it is observed that among 11 nitrogen sources maximum growth of *Colletotrichum capsici* was recorded in peptone followed by ammonium phosphate, ammonium oxalate and casein. Good growth occur in rest of the nitrogen sources.

Table no 1 Effect of different Nitrogen sources on the growth and sporulation of colletitrichum capsici.

SR.NO.	Nitrogen sources	Mycelial dry weight(mg)	Degree of Sporulation (visual)
1	Peptone	86	Excellent
2	Ammonium phosphate	75	Good
3	Ammonium oxalate	70	Good
4	Casein	65	--
5	Sodium nitrate	57	Good
6	Ammonium sulphate	54	Good
7	Ammonium nitrate	53	Good
8	Ammonium chloride	51	poor
9	Urea	47	Fair
10	Yeast	46	Fair
11	Potassium nitrate	42	Excellent
12	Control(without nitrogen source)	–	–

Out of the 11 nitrogen sources least growth occur in potassium nitrate. No growth of pathogen was observed in the medium without nitrogen source. Out of the five ammonium sources least growth of pathogen occurs in ammonium chloride. Sporulation of *Colletotrichum capsici* was excellent in peptone and potassium nitrate and good growth of sporulation in ammonium phosphate, ammonium oxalate, sodium nitrate, ammonium sulphate and ammonium nitrate. While fair growth of sporulation in urea and yeast and poor sporulation in ammonium chloride, in casein there is no sporulation takes place.

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