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SHORT COMMUNICATION

Effect of carbon sources on growth and sporulation of *Alternaria alternata* (Fr.) Keissler causing fruit rot of pomegranate

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Fruit rot of pomegranate (*Punica granatum* L.) caused by *Alternaria alternata* is one of most serious post harvest disease in throughout India. Rotted pomegranates were collected from various localities of Maharashtra. A total fifteen isolates of *Alternaria alternata* were isolated from rotted pomegranate. Their sensitivity was tested against carbendazim. MIC of all these isolates was obtained ranges from (834.6 ìg/ml -1123.8 μg/ml). The isolate *Aa*13 was sensitive (834.6 μg/ml) while isolate *Aa*15 was resistant (1123.8 μg/ml). Total of seven carbonsources wereused forthe growthof *A. alternata*. There was significant variation in the growth of the both sensitive and resistant mutant in various carbon sources. However, the growth of resistant mutant was higher in all carbon sources when compared with sensitive one. The sensitive isolate showed maximum growth in Sucrose (520mg/50ml) while minimum growth in D-Xylose (248mg/50ml) while resistant mutant showed maximum growth in D-Glucose (598mg/50ml), followed by Sucrose (548 mg/50ml), D-Dextrose (522 mg/50ml) and minimum growth in D-Xylose (312 mg/50ml). D-Glucose and Sucrose showed maximum sporulation and without nitrogen sources serve as control.

Key words: *Alternaria alternata*, carbendazim, carbon sources,pomegranate

INTRODUCTION

Fruit rot of Pomegranate (*Punica granatum* L.) caused by *Alternaria alternata* is one of the important post harvest diseases in India. The infection of *Alternaria alternata* causes spoils the quality of fruits for marketing purpose. Bhatt *et al.*(2000) recorded *A. alternata* as the causal agent of leaf blight disease of tomato and capsicum which has confirmed record of this fungus from Kumaon hill of Uttar Pradesh. It can be managed through systemic and conventional fungicides. Effect of different carbon and nitrogen and sporulation of sensitive and resistant mutant of *A. alternata* has been studied by Kadam (2020). Growth and sporulation of *A. alternari alternata* have been reported in India and abroad.Some important contribution with respect to the utilization of different carbon and nitrogen sources by different fungal pathogens have been made earlier (Ramjegathes and Ebnezar, 2012; Taware *et al.,* 2014).

The aim of the present study was to determine the role of carbon and nitrogen sources in pathogenesis caused by *A.alternata* inciting fruit rot disease to grapes and pomegranate (Gangawane 2008; Dahiwale *et al*. 2009; Kartin *et al.* 2011).

MATERIALS AND METHODS

Roving survey was made in the central fruits market of Maharashtra and field reported numerous diseases of Pomegranate, pathogens viz. *Aspergillus niger, Rhizopus stominifer, Sphaceloma punicae, Alternaria alternata, Colletotrichum sps.* Among this *Alternaria alternata* was found to be dominant in the storage houses of local and central fruit market, packing and also in orchards, hence it was selected for research problem. *Alternaria alternata* was isolated from rotted pomegranate, transferred on potato dextrose agar, slants and maintained at 4ºC. Seven carbon sources were selected for study. These were used individually and in mixture with carbendazim concentration used 50 μg/ml and 100 μg/ml in the Potato Dextrose Agar (PDA) medium.

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The plates were inoculated with resistant mutant *Aa* EMS-15 and incubated for 10 days at 27±2°C. After 10 days Percentage Control Efficacy (PCE) was calculated (Cohen,1989).

RESULTS AND DISCUSSION

Results given in Table 1 revealed that significant variation in the growth of the both sensitive and resistant mutant in various carbon sources. However, the growth of resistant mutant was higher in all carbon sources when compared with sensitive one. Carbendazim was used in mixture with the carbon sources, sensitive isolate showed maximum growth in Sucroseand D-Dextrose (520 mg/50ml and 503mg/50ml rspectively) while resistant strain showed its maxmum growth in D-Glucose and Sucrose (598mg/50ml and 548 mg/50ml respectively) and without carbon sources serve as control.

Thus, the similar results of the present study on the effect of sources of carbon*viz* maltose, glucose, sucrose, lactose and mannitol to support maximum growth and sporulation in *Alternaria alternata, Alternatacarthami* and several *Alternaria* spp were reported by several researchers (Kumar *et al.* 2006; Gholve *et al.* 2015; Patil Suryawanshi, 2015; Ghuge *et al*. 2019; Prakash and Prasad, 2019; Kadam 2020).

Table 1: Effect of carbon sources on the growth and sporulation of *Alternariaalternata*

Carbon source (3.0%)	Sensitive Dry mycelial weight (mg/50ml)	Sporulation 8 (DAI)*	Resistant Dry mycelial weight (mg/50ml)	Sporulation 8 (DAI)*
D-Glucose	598	+ + +	485	+ +
D-Galactose	345	+	316	+ + + +
D-Dextrose	522	+ +	503	+ + +
Lactose	305	++++	292	+
Sucrose	548	+ + +	520	+ + +
Maltose	434	+ +	375	+ +
D-Xylose	312	+	248	+
Control	Nil	-	Nil	-

Few growth+; Moderate ++Good growth +++Abundant + + + + Nogrowth
*Dayafterinoculation

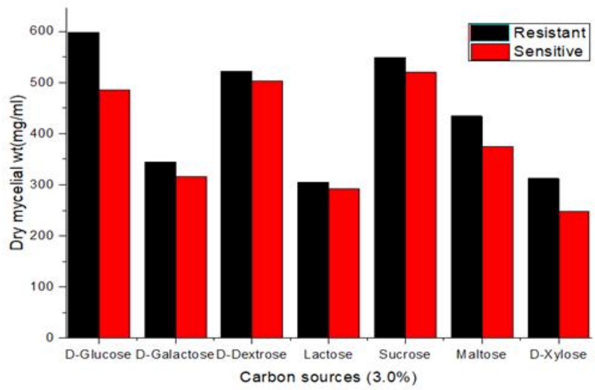

Fig.1: *In vitro* effect of Cabon sources on the growth and sporulation of *Alternaria alternata* sensitive and resistant to carbendazim ausing fruit rot of Pomegranate

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