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Effect of temperature and pH on production of cellulolytic enzyme by *Alternaria solani cuasing* early blight of tomato

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ABSTRACT

The studay was carried out the production of the cellulolytic enzyme and effect of physical factors like temperature and pH on enzyme production. Maximum enzyme production was recorded at temperature 26^{0}C and pH 7.8. However, minimum enzyme production was recorded at 10^{0}C and pH 4.0. The cellulolytic enzyme activity was increased with decrease in temperature. The rate of enzyme production was high when temperature is optimum which is 30 to 40^{0}C. From this it's clear that, the optimum cellulolytic enzyme activity was at 26^{0}C Temperature and pH 7.8.This investigation supported by the other investigators.

Key words : : Enzyme production, Cellulolytic enzyme, *Alternaria solani*, Optimum, Temperature, pH.

INTRODUCTION

Botanically, tomato belongs to the family Solanaceae and the genus *Lycopersicon*. The genus comprises of a few species of annual or short lived perennial herbaceous plants. It has become one of the common vegetables allover the country and grown extensively in many parts, almost thought out the year.

Like other crops, tomato is also most severely affected by various diseases of microbial origin. There are over two dozen diseases of tomato reported from the different parts of the country. Three fungal foliar diseases (late blight, early blight, and Septoria leaf spot) are common and especially troublesome to tomato growers for its successful cultivation. Early blight is a common and serious problem *Alternaria solani* and the symptoms usually appear leaves as circular or irregular, dark brown to black dead spots with concentric rings. It results the defoliation of leaves and reduction in yield. In order the pathogenicity, celluolytic enzyme activity was studied celluloses are found is cellulolytic enzyme. It is polymer of P-glucose unit joined by B-14 glucosidic linkages about 280 to 800 chains of cellulose which bound laterally by hydrogen bound and other cellulolytic enzyme are classified on the basis of their group as cellulose-1, Cx, and Cellobia.

MATERIALS AND METHODS

Collection of samples:

Diseased plants parts like leaves of tomato plants were collected in polyethine and used for isolation of pathogen (Mukadam and Gangawane, 1982).

Potato dextrose agar (PDA)

Compostion of media:

Peeled potato	-	250.0 g
Glucose	-	20.0g
Agar	-	12.0g
pH	-	6.0 to 6.5
Water	-	

Carboxyl methyl cellulose (CMC):-

CMC	-	10 g
KNO_3	-	2.5 g
KH_2PO_4	-	1.0g
$MGSO_4$	-	0.5g
Distilled water	-	1000ml.
pH	-	4.0

All the compounds were weighed. 100ml distilled water was taken in a flask and then the compounds were dissolved one after the other by heating slightly about pH was maintained.

The media sterilized at pressure of 15 lbs for 20 minutes in autoclave. 15ml of media was poured in each culture tube for slant preparation.50ml of liquid media was poured in each 250ml conical flask for enzyme production.

Glasswares were washed with potassium dichromate solution, followed by sterile distilled water, dried and kept in oven at 160^{o}C temperature for 1 hour.

Culture vessels :

Carboxyl methyl cellulose medium (50ml) was distributed in Erlenmeyer flasks (250 ml) and was sterilized in an autoclave before use.

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