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Research Article

STUDIES ON IN VIVO PRODUCTION OF CELLULASE AND PECTINASE BY ALBUGO CANDIDA (PERS.) KUNTUZ AND ALBUGO BLITI (BIV.)KUNTZ

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ABSTRACT

White rust of *Brasica campestris* L. caused by *Albugo candida* (Pers.) Kuntz and *Achranthus aspera* L. caused by *Albugo bliti* (Biv.) Kuntze were studied for disease intensity in relation with cell-wall degrading enzymes of the pathogens. Both the species of *Albugo* on the two hosts showed significant production of cellulase and pectinase in diseased tissue.

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INTRODUCTION

Little information is available on the enzymatic activity of obligate fungal parasites (Van Sumere et al 1957) *Albugo candida* (Pers.) Kuntz causes white-rust of *Brasica campestris* L. and *Albugo bliti* (Biv.) Kuntze causes white rust of *Achranthus aspera* L. But the role of enzymes in the pathogenesis is not known. A study on the in vivo cellulase and pectinase production by these parasites was made and the result are reported.

MATERIAL AND METHODS

For this healthy and infected material are taken from the field and experiment done at Laboratory. The leaves of *Brasica campestris* L. affected with *Albugo candida* (Biv.) Kuntze and *Achranthus aspera* L. caused by *Albugo bliti* (Biv.) Kuntze were removed separately and the extracts were prepared by homogenizing 15 gm hosts leaves in 30 ml 0.25M sodium chloride solution.

Table No.1 production of cellulase by by *Albugo candida* and *Albugo bliti*.

Treatment	Percent loss of viscosity over control after minute.			
	30	60	90	120
<i>Albugo candida</i> (Brassica)	36.8	51.0	77.0	86.5
<i>Albugo bliti</i> (Achyranthus)	21.2	36.4	56.2	66.4

The homogenate was filtered through whatman filtered paper twice and the filtrate was centrifuged for twenty minutes at 4000 rpm. The clear supernatant was used as the enzymes source. The enzymes assay was carried out at 30±1°C.

Table No.2 Production of pectinase by by *Albugo candida* And *Albugo bliti*

Treatment	Percent loss of viscosity over control after minute.			
	30	60	90	120
	Pectinase			
<i>Albugo candida</i> (Brassica)	34.8	52.0	74.0	84.5
<i>Albugo bliti</i> (Achyranthus)	20.4	35.3	46.2	56.5

For the determination of cellulase and pectinase, the standard viscometer technique (Hancock 1964) was followed using Carboxymethyl cellulase and sodium polypectate respectively as substrate. Extract prepared from healthy leaves was used as control for comparison. The reduction in viscosity was expressed as percentage loss in viscosity over water.

The result in Table no.1 and 2 reveal that the loss of viscosity of reaction mixture of diseased leaf extract increased with an increase with an increase in reaction time from 30 to 120 minutes. The activity of the enzymes produced by *Albugo bliti* in vivo was comparatively low. *Albugo candida* produced more cellulase and pectinase than the *Albugo bliti*.

According to Singh et al. cellulase and pectinase production by *Albugo candida* and *Perenospora parasitica* and Van Sumere

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et al. cellulase and pectinase were produced by Uredospores of *puccinia graminis* var. *tritici*.

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