

ENZYMATIC CHANGES IN BROWN-SPOT DISEASED RICE LEAVES

BY

NIRMALENDU SAMAJPATI AND PARIMAL ROY*

Mycology (Basic & Applied) Laboratory, Department of Botany,
University of Calcutta-19.

Recently alteration in enzyme activity and metabolism of diseased plants after pathogenic infection have been received much attention. Stahmana (1967) and Farkas *et al.* (1965) have reviewed elaborately the changes of enzyme level in the host plant by pathogenic infection and the consequent altered metabolism. Oku (1968) has reported the enzymatic nature of phloroglucinol-oxidising enzyme of rice leaves and the mechanisms of increase in enzyme activity by fungal infection.

The present paper reports the variation in phloroglucinol-oxidising enzyme activity of the rice leaves by infection of different isolates of *Helminthosporium oryzae*.

The rice plants (Bhasamanik) were grown in a soil bed in earthenware pots in the greenhouse. At the stage of appropriate growth, rice plants were sprayed with a spore suspension (3×10^5 conidia/ml) of *H. oryzae* (virulent and avirulent strain). After spraying, the plants were kept in a temperature (25°C) and humidity (85%) controlled room for overnight and then transferred into greenhouse and grown under natural conditions. At the tillering stage, rice leaves with characteristic symptoms of both the inoculated groups (*i.e.*, virulent and avirulent strain of *H. oryzae*) and healthy were collected for the enzyme assay. The collected leaves were cut into small pieces and were ground in a ice chilled mortar with N/10 phosphate buffer (pH 6.0) with acid washed sand. The homogenate was filtered and centrifuged at 8,000 g for 10 minutes. The supernatant portion was decanted off and used in further experiment as the "crude enzyme". Oxygen uptake was measured according to Oku (1968).

The results obtained during the experimental periods are given in Table 1.

Table 1. Data showing the effect of *H. oryzae* inoculation on phloroglucinoloxidase activity in rice leaves.

Experiment No.	Oxygen uptake Healthy	(μ /ml of homogenate)		Percentage of increase	
		Virulent strain	Avirulent strain	Virulent	Avirulent
1	43.6	66.2	48.2	128	111
2	48.4	76.0	53.2	155	109

* Present Address—Lecturer in Botany, Raj College, Jhargram.

It has been found that there is appreciable increase in enzyme activity in rice leaves by infection both with virulent and avirulent strain of *H. oryzae*. In case of avirulent strain the enzyme activity is greater than that of virulent strain. This is possibly due to the fact that cytochrome c is reduced by this enzyme followed by an increase in ATP level, which serve as the energy of the host plant to resist infection (Oku, 1968).

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