

**INDUCED BIOCHEMICAL DEFENCE  
MECHANISMS IN TEA AGAINST BLISTER  
BLIGHT**

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## ABSTRACT

Blister blight is the major and the most destructive leaf disease in tea. *Exobacidium vexans* is the causal organism, It is an obligate parasite, infect pathogen is only activated by the live flush of the tea bush. Control of the blister blight, repeated application of fungicides in short intervals which have caused problems in quality of tea, environment, health and economic activity.

Therefore this study was planned to detect the natural defence mechanisms in tea plant against the blister blight. In this study the biochemical reactions which are involving in induced defences were studied in blister blight resistance (TRI 2043) and susceptible (TRI 2025) tea cultivars. Total protein contents of the tea leaves were determined using Bradford protein assay with Bovine Serum Albumin as standard. With the infection of blister blight protein content was significantly increased in both cultivar and increasing amount is high in resistant cultivar. Chitinase shows inhibitory activity to fungal spore germination and mycelial growth. Chitinase activity was done using gel diffusion method and significantly increased with blister blight infection.

In many host-fungus interactions, one of the first events detected in attacked host cells or cells artificially treated with fungal elicitors is the rapid and transient generation of activated oxygen radicals, including superoxide ( $O_2^-$ ) and hydrogen peroxide ( $H_2O_2$ ). Detection of superoxide was achieved by Nitroblue tetrazolium (NBT) staining and formation of  $H_2O_2$  was detected by 3, 3- diaminobenzidine (DAB).  $O_2^-$  and  $H_2O_2$  formation was observed in both susceptible and resistant cultivars. Initially  $H_2O_2$  formed in resistant cultivar and delayed in susceptible cultivar. Highly localized  $O_2^-$  generation is associated directly with successful penetration and accumulates in living cells neighboring HR cells.  $H_2O_2$  accumulation is linked to penetration resistance and the execution of HR cell death.

$\beta$  1,3-glucanase assay and peroxidase assay were done according to the Dann and Deverall, (2000). In  $\beta$  1,3-glucanase assay result were calculated as a change in optical density at 610 nm ( $\Delta OD_{610}$ )  $mn^{-1}$  and activity was initially reduces in translucent spots and increase in mature blisters. Peroxidase assay was calculated as ( $\Delta OD_{610}$ )  $mn^{-1}$  and slightly reduction in susceptible cultivar and increasing in resistant cultivar with infection.

In artificially inoculation, translucent spots were observed two week after inoculation. The inoculated shoots and detached leaves were infected by *C. camelliae* and *Pestlotia sp.* before development of blisters. Artificially inoculation method should be further develop considering to prevention of other fungi and be favor the germination of infected blister blight.

**Key words:** Resistant Cultivar, Susceptible Cultivar, Blister Blight, Induce Defence, *Exobasidium vexans*, *Camellia sinensis* L.