

ROLE OF ORGANIC ACIDS ON RESISTANCE AND SUSCEPTIBILITY OF  
THEOBROMA CACAO TO *MONILIOPTHORA PERNICIOSA*, CAUSAL AGENT  
OF WITCHES' BROOM

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The major pathogen of *Theobroma cacao* is the hemibiotrophic fungus *M. perniciosa*. The life cycle of this fungus involves a biotrophic intercellular growth, followed by an intracellular, saprophytic growth. Previous results showed a role of calcium oxalate degradation on the generation of reactive oxygen species (ROS). ROS are believed to play an important role triggering programmed cell death in plants. In order to understand the involvement of the organic acids (OA), susceptible (SP) and resistant (RT) genotypes of infected cacao plantlets were used to obtain the OA accumulation profile, using HPLC, during the progression of the disease. In addition, semi-quantitative PCR for oxalate oxidase (OXO) and ascorbate peroxidase (APX) genes was performed. The degradation of oxalic acid by OXO releases H<sub>2</sub>O<sub>2</sub>. In plants, ascorbate is the major source for oxalic acid. Surprisingly, despite the levels of ascorbate on the SP genotype increased rapidly after inoculation, the expression of APX decreases. Also, increasing oxalate levels were detected. Conversely, the oxalate and ascorbate levels on RT genotype were stable, with an unidentified peak (probably indole acetic acid) increasing rapidly and is being identified by MS. The results indicate an intricate balance on OA levels on the disease resistance and susceptibility.