Proteins Identified in the *Theobroma cacao* Phylloplane can Represent an Important Mechanism of Protection against Phytopathogens

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**Introduction.** The culture of cacao in Brazil is threatened by the witches' broom disease, caused by the fungus *Moniliophthora perniciosa*. The spread of *M. perniciosa* occurs via spores, and the surface of the young cocoa tissues, or phylloplane, is used as entry point in the host. Thus, the phylloplane may be considered as the first molecular battlefields of the cocoa-*M. perniciosa* interaction. It contains metabolites and proteins acting in plant defense against pathogens. In this study, we identified proteins on the leaf surface of cocoa through 2DE-MS/MS. **Material and Methods.** Three hundred plants were grown under irrigation in greenhouse, and from them, 1250 young leaves (5-10 days) were washed for 30 s in distilled water. The leaf water washes of the leaves (LWW) was filtrated, lyophilized and used for protein extraction and separation by SDS-PAGE 15% and 2D-PAGE 12.5%. The bands and spots were excised, processed and analyzed by MS/MS on Micromass ESI-Q-TOF Micro (Waters). **Results and Discussion.** Twenty-eight, 13 and 14 proteins of plant, of bacteria or non identified, respectively, were obtained from the LWW. Most of plant proteins is related to plant-pathogen interaction, synthesis and/or degradation of nucleic acids, and metabolism. Some proteins belong to the innate plant defense process, such as β-caryophyllene synthase and terpene cyclase involved in the biosynthesis of secondary metabolites, as well as E3 ubiquitin ligase and PUB14 kinase involved in plant-pathogen interaction. Enzymes such as a glicoprotease, a protein family serine carboxypeptidase S28 and a protein 10 are involved in plant physiology and defense. Due to symbiotic interactions with micro-organisms, bacterial proteins as elongation factors G, Tu and Ts, and poly-ribonucleotide nucleotidyltransferase protein were also found; they may be involved in transcription and translation processes, respectively. **Conclusions:** Proteins of cacao phylloplane may represent important initial role in the defense mechanisms against pathogens.

**Keywords:** *Theobroma cacao* L., Phylloplane, *Moniliophthora perniciosa*

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