

Esterase Activity and Adhesion during the Early Stages of *Hemileia vastatrix* Differentiation

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SUMMARY

Hemileia vastatrix Berkeley and Broome is the causal agent of coffee leaf rust, the major disease of *Coffea arabica* plants. The fungus infects the lower surface of the leaves where it produces large, orange colonies of uredosori leading to premature leaf fall and yield losses. The initiation of the dycariotic phase of *H. vastatrix* on coffee leaves, as with other rust fungi, involves specific events including adhesion to the host surface, urediospore germination, appressorium formation over stomata, penetration and inter- and intracellular colonization. Cytological and biochemical techniques were used to investigate the adhesion process of *H. vastatrix* to coffee leaves and oil collodion membranes. Urediospores adhesion assays showed the relevance of extracellular matrix in this process. However the residual level of adhesion observed in washed urediospores (without extracellular matrix) may result from passive interactions acting simultaneously with an active process. The use of oil collodion membranes, that induced urediospores germination and apressoria development in host absence, allowed the analyses of protein composition and some enzymatic activities during these early steps of rust differentiation. Results obtained, showed an increase of total esterase activity both in extracellular matrix of urediospores and after appressoria formation. Isoenzymatic profiles obtained using the techniques of isoelectric focusing electrophoresis (IEF) and polyacrylamide gel electrophoresis (PAGE) support these data and seem to suggest the involvement of esterases in *H. vastatrix* adhesion process.