

THE ALTERNATIVE COMPONENTS OF THE MITOCHONDRIAL RESPIRATORY CHAIN OF *MONILIOPHTHORA PERNICIOSA*

Thomazella, D.P.T.; Rincones, J.; Garcia, O.; Toni, I.; Pereira, G.A.G.
Departamento de Genética e Evolução, IB/UNICAMP, São Paulo

The hemibiotrophic fungus *Moniliophthora perniciosa* is the causal agent of witches' broom disease in *Theobroma cacao*. Similar to other fungi, mitochondrial respiration in *M. perniciosa* is performed by a combination of standard and alternative components. Inspection of the fungus genome led to the identification of some putative genes coding for alternative enzymes of the mitochondrial respiratory chain. In view of these findings, the aim of this work was the study of the transcriptional regulation of two mitochondrial genes: alternative oxidase (*Aox*) and alternative NADH dehydrogenase (*Ndh*). Expression of both genes was analyzed by northern blot assays of RNA extracted under different conditions, including chemical inhibition of the classical respiratory chain, oxidative stress and senescence. Also, southern blot analysis of genomic DNA indicated the presence of a single copy of *Aox* gene in the fungus genome. Overall, our data revealed all treatments induced the expression of the alternative components at different levels. These results are in concordance with these proteins being part of the response mechanism to many different types of stress, both external and internal. In addition, our data suggest these genes display a coordinated response to some treatments, being induced at the same time by the same stimuli. These proteins might be important for the infection, allowing the fungus to stand the defense response of the plant.

Key words: Alternative oxidase, Alternative NADH dehydrogenase, *Moniliophthora perniciosa*, Witches' broom disease

Supported by: FAPESP