Molecular chaperone modulation in cocoa leads to plant resistance to *Moniliophthora perniciosa*

Grazielle da Mota Alcântara¹, Gláucia Carvalho Barbosa Silva², Karina Peres Gramacho², Marcio Gilberto Cardoso Costa², Fátima Cerqueira Alvim²

¹²Universidade Estadual de Santa Cruz/ UESC, e-mail: grazyalcantara@hotmail.com

**INTRODUCTION**

*Moniliophthora perniciosa*, the causal agent of witches' broom disease, is one of the main pathogens that affect cocoa cultivation in America. The pathogen is usually carried out by the use of resistant by phytosanitary pruning and the identification plant's defense mechanism. Biding Protein (BiP) is that plays an important role in the regulation of plasmic Reticulum (ER) and cellular protection abundant protein under all growth conditions, but only induced in conditions that lead to the polypeptides in the ER, such as when plants hogens. In this work, we overexpressed the BiP gene in tomato plants and investigated its functionality in tolerance to *M. perniciosa*.

**METHODOLOGY**

**Genetic transformation**

**Molecular analysis of transgenic plants**

- PCR Analysis
- Western blot Analysis

**Inoculation of *M. perniciosa* in plants of tomato**

![Inoculation procedures](image)

**RESULTS**

![Molecular analysis of S. lycopersicum plants expressing SoyBiP](image)

1. Molecular diagnosis of *S. lycopersicum* plants expressing SoyBiP. Genomic DNA subjected to PCR reaction using primers for nptII (Neomycin Phosphotransferase). 2- Protein analysis of transgenic lines and BiP expression. (A) Negative control, (B) Positive control, (WT) Untransformed plants, (L1 to L12) transgenic lines.

**DISCUSSION**

Our results suggest that BiP overexpression may have a protective role against pathogen attack. Indeed we observed a positive correlation between BiP accumulation and plant tolerance to *M. perniciosa*. It is possible that under the accumulation of BiP in the lumen of the ER, secretory proteins, such as PRs, are more readily assembled giving the plant a molecular advance in the response to the pathogen infection.

**CONCLUSION**

More research needs to be carried out to better understand the molecular basis of resistance induced by overexpression of BiP in *S. lycopersicum*. However, our results bring the notion that it may be possible to develop new strategies to control the pathogen based on selective expression of endogenous expression of cocoa BiP.

**ACKNOWLEDGMENT**