

## RNA INTERFERENCE (RNAi) APPROACH IN PEST MITES: GENE FUNCTION AND PERSPECTIVES FOR MANAGEMENT

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RNA interference (RNAi) is a post-transcriptional gene silencing which is triggered by double-stranded RNA (dsRNA) into a cell. It is a powerful technology for studies of gene function *in vivo*, and can be a potential tool for pest control. A variety of efficient methods have already been developed for introducing dsRNA into different pest mites, as *Tetranychus urticae*, *T. cinnabarinus* and *Panonychus citri*, using microinjections, transgenic plants, immersion in dsRNA, among others. *Brevipalpus yothersi* is the most important mite vector of Citrus leprosis virus C (CiLV-C, genus *Cilevirus*), the main viral disease in citrus orchard and their control cost around 50 million dollars per year in Brazil, and this scenario is aggravated due to few acaricides available. Thus citrus crop may have an immediate demand for new technologies for the control of these mites. In this work, we develop a delivery method that mites suck dsRNA from wet filter paper with. In order to validate it, we transferred females from a isoline mite to filter paper discs (2 cm ø) wet with dsRNA for the target gene *ByCOPB2* (Coatomer subunit beta 2) and the controls *EGFP* (Enhanced Green Fluorescent Protein) and tap water, 900 mites per treatment. The mites sucked dsRNA for 5 hours, after that, we transferred them to been leaf (2 cm ø) for 24 hours and 7 days. RT-qPCR analysis showed ~40% of reduction of target gene expression after 24 hours, in mites treated by *dsByCOPB2* compare to mites treated with *dsEGFP* or water (controls). We believe that, the first step for success in silencing genes by RNAi is an efficient delivery method. So far, effective oral delivery of dsRNA open up the speculation that RNAi strategy can be a pest controls method acting specie-specific.

Keywords: citrus leprosis, gene-silencing, COPB2, gene function.

Financial support: INCT-Citros 465440/2014-2, FAPESP 2016/21749-8, FAPESP 2016/12912-2.