CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL REPORTS: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

▶ SELECT PERIOD December 2013

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Investigation of Non-Antibiotic Tetracycline Analogs and Formulations Against HLB

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
1/21/14	Citrus Research and Development Foundation	Infection Responses

REPORT UPDATE (500 words-It is not necessary in this public report to disclose your institution's proprietary information or intellectual property.)

This research is directed at determining the activity of Non-antibiotic tetracycline analogs against the causative agent of HLB. Through chemical changes within the family of tetracycline derivatives it has been determined that specific derivatives harbor increased potency against surrogate strains of Liberibacter used to assess antibioitic compounds in vitro. In a several series of derivatives analogs were found to possess 2 to 3 orders of activity against the test strain compared to oxytetracycline, and EPA registered antimicrobial agent, and a 1st generation tetracycline useful against Liberibacter and other alpha-proteobacteria.

In these studies, conducted at the University of Florida, separate compound series have emerged, with limited or no activity against human Gram positive and negative pathogens, allowing their classification as Non-antibiotic compounds. Additionally, clinically used tetracyclines, doxycycline and minocycline, had no activity against the surrogate strain, delineating specific structure-activity properties in these non-antibiotic tetracyclines. Other relationships exist between potency and activity in vitro, and further synthetic studies will be done to further increase activity against the causative agent of HLB.

Other studies using non-antibiotic tetracyclines have demonstrated that specific compounds and series are able to be formulated using specific systems for delivery and application to the tree bark systems, showing enhanced penetration and distribution throughout the citrus tree via phloem transport.

In future studies 2 compounds have been readied for field trials, with current enhanced formulations, and other and more potent compounds will be synthesized and examined for enhanced anti-HLB activity.

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