



By Chris Komorek

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Solution found to Citrus Greening Disease



Image: UCR

University of California finds substance capable of controlling devastating citrus disease

Scientists at the University of California, Riverside (UCR) have found the first substance capable of controlling Citrus Greening Disease, which has devastated citrus farms in Florida and also threatens California.

The University of Florida has also been working towards a solution, as [reported in March 2020](#).

A release issued by UCR explains the new treatment effectively kills the bacterium causing the disease with a naturally occurring molecule found in wild citrus relatives.

The molecule, an antimicrobial peptide, offers numerous advantages over the antibiotics currently used to treat the disease.

UCR geneticist Hailing Jin, who discovered the cure after a five-year search, explained that unlike antibiotic sprays, the peptide is stable even when used outdoors in high heat, easy to manufacture, and safe for humans.

"This peptide is found in the fruit of greening-tolerant Australian finger limes, which has been consumed for hundreds of years," said Jin.

"It is much safer to use this natural plant product on agricultural crops than other synthetic chemicals."

Currently, some growers in Florida are spraying antibiotics and pesticides in an attempt to save trees from the CLAs bacterium that causes citrus greening, also known as Huanglongbing (HLB).

"Most antibiotics are temperature sensitive, so their effects are largely reduced when applied in the hot weather," explained Jin. "By contrast, this peptide is stable even when used in 130-degree heat."

The UCR release explains that Jin found the peptide by examining plants such as the Australian finger lime, known to possess natural tolerance for the bacteria that causes Citrus Greening Disease.

She was able to isolate the genes that

contribute to this innate immunity. One of these genes produces the peptide, which she then tested over the course of two years. Improvement was soon visible.

"You can see the bacteria drastically reduced, and the leaves appear healthy again only a few months after treatment," noted Jin.

One of the added benefits of the peptide is that it only needs to be reapplied a few times per year, meaning it is highly cost effective for growers. It can also be developed into a vaccine-like solution to protect young healthy plants from infection, as it is able to induce the plant's innate immunity to the bacteria.

The peptide can be applied by injection or foliage spray, and it moves systemically through plants and remains stable, which makes the effect of the treatment stronger.

The treatment will be further enhanced with proprietary injection technology made by Invaio Sciences.

UC Riverside has entered into an exclusive,

said Invaio chief science officer, Gerardo

"Cutting edge research from UCR, like the

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worldwide license agreement with Invaio, ensuring this new treatment goes exactly where it's needed in plants.

"The prospect of addressing this previously incurable and devastating crop disease, helping agricultural communities and improving the environmental impact of production is exciting and rewarding. This is crop protection in harmony with nature,"

Ramos.

Brian Suh, director of technology commercialisation in UCR's Office of Technology Partnerships, highlighted while there's a global need for a cure to HLB, it's particularly important in California, which produces up to 80 per cent of the fresh citrus in the US.

"This license to Invaio opens up the opportunity for a product to get to market faster," noted Suh.

peptide identified by Jin, has a tremendous amount of commercial potential and can transform the trajectory of real-world problems with these innovative solutions."