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Microorganisms to protect plants: Beneficial effects of the oomycete *Pythium oligandrum* on grapevines

Development of alternative methods to chemical pesticides to control plant diseases increased considerably in recent years. Among them, the use of beneficial microorganisms for plant protection and/or plant growth stimulation is promising, in particular under recent advances in transcriptomics and genome sequencing that give new insights in the potential of microorganisms and new product development opportunities. Here, we report the development of a biocontrol product based on the oomycete, *Pythium oligandrum*, to protect grape *P. oligandrum* ine against Esca, a major grapevine trunk disease that causes substantial losses in vineyards worldwide. No efficient chemical products are registered against this disease. In order to control Esca, *P. oligandrum* strains have been isolated from the rhizosphere of grapevines cultivated in the winegrowing region of Bordeaux (France). A multiyear greenhouse assay showed that *P. oligandrum* colonized grapevine rhizosphere over months, stimulated plant defense and can protect grapevine against Esca (disease reduction ranged from 40 to 60%). Transcriptomic analysis (Microarrays and RNAseq) showed that Induced Systemic Resistance (ISR) was activated in plants treated with *P. oligandrum* when challenged with pathogen. A priming effect was also pointed out. Currently, a method to manage Esca disease with this plant beneficial microorganism is developed.

Biography

Jonathan Gerbore has received his PhD at the University of Pau et des Pays de l'Adour, France in 2013 in the field of Biotechnology and Agronomy. He is the Head of Research and Development at Biovitis company and works in collaboration with the research unit SAVE at the National Research French Institute (INRA).

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