Title:

Formulation and Spray Drying of Fire Blight Phage-Based Biopesticide

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Abstract:

Fire blight is a major disease of apple and pear trees causing a big economical loss. It is caused by epiphytic bacterium, *Erwinia amylovora* on blossoms. The key point to control the fire blight disease is to inhibit bacterial growth before or in the blossom-blight phase. Control strategies including chemical control such as the using of antibiotics, mainly, Streptomycin or by using copper sprays. However, the developing of Streptomycin-resistant *Erwinia*, awareness of transfer the Streptomycin-resistance to human pathogenic bacteria and phytotoxic effects of copper sprays on blossoms and fruits, all these reasons urge the need of alternative strategies for fire blight control. Biocontrol of fire blight using microbial antagonists such as *Pantoea agglomerans* is commercially available and consider as a comparable alternative to Streptomycin. With the increasing in the phage applications in the recent years, biocontrol of fire blight by *P. agglomerans* Eh21-5 that carrying phage against *Erwinia* gave promising results on experimental and green house scales. The key step for commercialization of this approach is the development of a formulation in which the phage-carrier *P. agglomerans* can survive to a considerable length of time. Here we present the spray dray formulation of phage-carrier *P. agglomerans* and its application to control fire blight.