

Induction of host defence enzymes by the endophytic bacterium *Serratia marcescens*, in banana plantlets.

Abstract

Pre-inoculation with the endobacterium *Serratia marcescens* (strain UPM39B3) induced the production of host defence enzymes such as peroxidase, polyphenoloxidase, phenylalanine ammonia lyase, total soluble phenols and lignothioglycolic acid in banana plantlets. The levels of these enzymes were evidently higher in plantlets pre-treated with the endobacterium compared to the control. The production of host-induced enzymes benefitted the crop plants as they may have a role in suppressing *Fusarium* wilt incidence in the plantlets. This was evident when plantlets pre-treated with the endobacterium showed a lower disease severity (50%) compared to diseased plantlets lacking the endobacterium (74%). The results of this study thus highlight the potential of the isolate *Serratia marcescens* (strain UPM 39B3) as a biological control agent for *Fusarium* wilt management in bananas, reducing disease severity via stimulation of host defences.

Keyword: Biological control agent; Endobacterium; *Fusarium* wilt; Host defence enzymes.