

Induction of Tolerance to Fusarium Wilt and Defense-Related Mechanisms in the Plantlets of Susceptible Berangan Banana Pre-Inoculated with *Pseudomonas* sp. (UPMP3) and *Burkholderia* sp. (UPMB3)

ABSTRACT

This study is aimed at assessing the ability of two endophytic bacteria originally isolated from healthy oil palm roots, *Pseudomonas* sp. (UPMP3) and *Burkholderia* sp. (UPMB3) to induce resistance in susceptible Berangan banana against *Fusarium oxysporum* race 4 (FocR4). Increased accumulation of resistance-related enzymes such as peroxidase (PO), phenylalanine ammonia lyase (PAL), lignithioglycolic acid (LTGA), and pathogenesis-related (PR) proteins (chitinase and β -1,3-glucanase) has been observed in plantlets treated with endophytic bacteria UPMP3 and UPMB3 singly or as mixture under glasshouse conditions. Pre-inoculation of banana plantlets with UPMP3 showed a significant reduction in *Fusarium* wilt incidence 72 d after challenged inoculation with FocR4. UPMB3 was less effective in suppressing *Fusarium* wilt compared to UPMP3, whereas, the mixture of both endophytes showed an intermediate effect. Based on these results, it is concluded that UPMP3 could be a promising biological control agent that can trigger resistance against *Fusarium* wilt in susceptible Berangan banana.

Keyword: banana, *Pseudomonas* sp., *Burkholderia* sp., induce resistance, *Fusarium* wilt