Activities of chitinase enzymes in the oil palm (Elaeis guineensis Jacq.) In interactions with pathogenic and non-pathogenic fungi

Abstract

Ganoderma boninense Pat. is a fungal pathogen that causes basal stem rot disease in the oil palm (Elaeis guineensis jacq.). Chitinases are important defence enzymes in plants. In this study, the activities of chitinase was analyzed at various time points in roots and leaves of oil palm in the presence of G. boninense and Trichoderma harzianum (a biocontrol fungus used to combat G. boninense infection), either alone or together. At two weeks post infection, G. boninense alone treatment showed significant chitinase activity of 35.28 and 30.83 U/mg in the roots and in leaves of oil palms, respectively. In the treatments with T. harzianum alone or in combination with G. boninense the chitinase activity was significantly increased (compared to control plants) to 15.14 and 18.8 U/mg in leaf tissue, and 26.11 and 22.08 U/mg in root tissue, respectively at two weeks post inoculation. This suggests that the chitinase enzyme activity induced by T. harzianum in oil palms may have a role in the defence response against microbial pathogen infections.