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## Comparative proteomic analysis of *Ganoderma* species during *in vitro* interaction with oil palm root

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Basal stem rot (BSR) in oil palm caused by *Ganoderma* sp. is a deadly disease affecting oil palm plantation yield and global cooking oil supply. A pathogenic species, *Ganoderma boninense* is claimed as the main causal agent of BSR while *Ganoderma tornatum* is regarded as non-pathogenic and unable to infect living palms. Insufficient information on the infection mechanism and immature early detection strategy of the pathogen are among the disease control limitations. The existing molecular studies on the oil palm-*Ganoderma* interaction mainly focused on the response of the plant towards the fungus infection while the information on the pathogen responses is still scarce. Therefore, in this study, comparative proteomic analyses were conducted to investigate the changes in the dikaryotic mycelial protein expression of the pathogenic *G. boninense* and non-pathogenic *G. tornatum* during *in vitro* interaction with oil palm root. The phenol/ammonium acetate in methanol was shown to be the most effective protein extraction method for 2-DE proteomic studies of *Ganoderma* spp. mycelia. Scanning electron microscope (SEM) images confirmed the hyphae attachment and colonization of both species on the oil palm root surface after 72 h of inoculation. Comparative proteomic analysis showed that the mycelial proteins from oil palm root exhibited different expression profiles when compared to the mycelia grown on Potato Dextrose Agar (PDA). Proteins differentially expressed in both species may have either direct or indirect link to virulence and pathogenicity, metabolism, growth and maintenance of both *Ganoderma* species. Identification of these proteins during the interaction with oil palm roots may provide fundamental information for further investigation on specific roles of the identified proteins towards *Ganoderma* infection mechanism and facilitate selection of potential markers for early detection of BSR in the future.

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