

Differential proteomic study of oil palm leaves in response to in vitro inoculation with pathogenic and non-pathogenic *Ganoderma* spp.

ABSTRACT

Basal stem rot is an aggressive disease in oil palm caused by *Ganoderma* species. The disease threatens the commercial oil palm plantations of South East Asia, especially in Malaysia. In order to understand the mechanism involved in the early stage of interaction between *Ganoderma* spp. and its host at systemic level, proteomic analysis of oil palm leaves was conducted on protein samples collected over 72 hours during inoculation with pathogenic *Ganoderma boninense* and non-pathogenic *Ganoderma tornatum*. A total of 82 proteins resolved during two-dimensional gel electrophoresis with significant differences in the spot abundance. However, only 24 differentially expressed proteins in response to *Ganoderma* spp. inoculations were successfully identified by mass spectrophotometry as compared to the non-inoculated control. These proteins are mainly involved in photosynthesis, signalling, stress/defense, energy and metabolism regulation. Changes in relative abundance of these proteins suggest an important role in disease susceptibility. Most proteins showed altered abundance in response to both *G. boninense* and *G. tornatum*, while some proteins were only affected by either *G. boninense* or *G. tornatum*. The putative role of the identified proteins in oil palm leaves during the interaction with both *Ganoderma* spp. is discussed.

Keyword: Proteomics; *Ganoderma boninense*; *Ganoderma tornatum*; Oil palm; Plant-pathogen interaction