

Genetic and morphological diversity of Ganoderma species isolated from infected oil palms (*Elaeis guineensis*)

ABSTRACT

The objectives of this study were to investigate the diversity of *Ganoderma* species isolated from upper stem rot (USR) and basal stem rot (BSR) infected palms in term of their genetic and morphological characteristics. A total of 46 samples of *Ganoderma* species were collected randomly from two oil palm plantations, namely Betong and Miri in Sarawak, Malaysia. The samples were identified using multiplex polymerase chain reaction (multiplex PCR) to reveal three pathogenic *Ganoderma* species (*G. zonatum*, *G. boninense* and *G. miniatocinctum*). *Ganoderma zonatum* was the dominant species (71.7%), followed by *G. boninense* (26.1%) and *G. miniatocinctum* (2.2%). This suggests that *G. zonatum* may have played a more vital role in the epidemiology of the disease than previously believed. The multiplex PCR was a precise identification technique compared to morphological based identification. *Ganoderma* species in the oil palm plantation was genetically heterogeneous based on somatic compatibility test which is suggestive of disease spread via spore dispersal that generates new genetically distinct individuals. There were also significant variations within and between *Ganoderma* species in terms of their cultural morphology and basidiospore characteristics. Cluster analysis of the cultural morphology and scattered plot of basidiospore features also indicated that there was no distinct relationship within and between species, disease types or geographical origins of *Ganoderma* species.