

## Oil palm defensin: a thermal stable peptide that restricts the mycelial growth of *Ganoderma boninense*

### ABSTRACT

Plant defensins are plant defence peptides that have many different biological activities, including antifungal, antimicrobial, and insecticidal activities. A cDNA (EgDFS) encoding defensin was isolated from *Elaeis guineensis*. The open reading frame of EgDFS contained 231 nucleotides encoding a 71-amino acid protein with a predicted molecular weight at 8.69 kDa, and a potential signal peptide. The eight highly conserved cysteine sites in plant defensins were also conserved in EgDFS. The EgDFS sequence lacking 30 amino acid residues at its N-terminus (EgDFS<sub>m</sub>) was cloned into *Escherichia coli* BL21 (DE3) pLysS and successfully expressed as a soluble recombinant protein. The recombinant EgDFS<sub>m</sub> was found to be a thermal stable peptide which demonstrated inhibitory activity against the growth of *G. boninense* possibly by inhibiting starch assimilation. The role of EgDFS<sub>m</sub> in oil palm defence system against the infection of pathogen *G. boninense* was discussed.

**Keyword:** Defensin; Oil palm; *Elaeis guineensis*; *Ganoderma*; Pathogen;  $\alpha$ -amylase