The potential of endophytic *Trichoderma* from oil palm (*Elaeis guineensis* Jacq.) roots of North Sumatra, Indonesia against *Ganoderma boninense*

ABSTRACT

Utilisation of endophytic *Trichoderma* increases tremendously as an alternative control against *G. boninense*, causal pathogen of basal stem rot (BSR) disease of oil palm. However, investigation of endophytic *Trichoderma* from Indonesia is still very scarce. The aims of this study were to isolate, identify and investigate the potential of endophytic *Trichoderma* from oil palm roots. Three potential endophytic *Trichoderma* species were isolated and further identified using macroscopic, microscopic, and molecular methods. Antagonistic activities of endophytic *Trichoderma* were tested using dual culture agar and poison food agar assay. A molecular approach using DNA sequencing of 5.8S-ITS region successfully identified the endophytic *Trichoderma* isolate ET501 as *Trichoderma reesei* strain RHa, while isolates of endophytic ET523 and ET537 were identified as *Trichoderma asperellum* isolate F1 and *Trichoderma asperellum* strain Q1, respectively. *Trichoderma reesei* ET501 was the most aggressive isolate against G. boninense with PIRG of 95.1% compared to *T. asperellum* ET523 and *T. asperellum* ET537 with PIRG of 87.1% and 88.9%, respectively. Meanwhile, *T. reesei* ET501 showed the strongest antibiosis activity with 100% inhibition in 80% concentration, compared to *T. asperellum* ET523 and *T. asperellum* ET537 which gave 12.3% and 90.5% of inhibition, respectively.