

## ABSTRAK

**Christina Oktora Matondang. 2024.** “Potensi Metabolit Sekunder *Trichoderma* sp. dan *Pseudomonas fluorescens* Dalam Mengendalikan Penyakit Pembuluh Kayu (Vascular Streak Dieback) Tanaman Kakao (*Theobroma cacao* L.)”, dibimbing oleh Syamsafitri dan Nurhayati. Penelitian ini bertujuan untuk mengetahui potensi metabolit sekunder *Trichoderma* sp. dan *Pseudomonas fluorescens* dalam mengendalikan penyakit pembuluh kayu (*Vascular Streak Dieback*) pada tanaman kakao. Penelitian ini dilaksanakan di Laboratorium BBPPTP Medan dan kebun kakao milik PT. Hasfarm Sukokulon Betinga Estate, Desa Lau Mulgap, Kecamatan Selesai, Kabupaten Langkat, Provinsi Sumatera Utara pada Juni-Desember 2023. Penelitian di lapangan menggunakan Rancangan Acak Kelompok (RAK) dengan 2 faktor yaitu jenis metabolit sekunder dan taraf konsentrasinya. Perlakuan sebanyak 4 dengan 3 taraf konsentrasi yaitu kontrol (tanpa metabolit sekunder), metabolit sekunder *Trichoderma* sp. konsentrasi 10 ml/L, metabolit sekunder *Trichoderma* konsentrasi 20 ml/L, metabolit sekunder *Trichoderma* konsentrasi 30 ml/L, metabolit sekunder *P. fluorescens* konsentrasi 10 ml/L, metabolit sekunder *P. fluorescens* konsentrasi 20 ml/L, metabolit sekunder *P. fluorescens* konsentrasi 30 ml/L, metabolit sekunder *Trichoderma* konsentrasi 10 ml/L+ metabolit sekunder *P. fluorescens* konsentrasi 10 ml/L, metabolit sekunder *Trichoderma* konsentrasi 20 ml/L+ metabolit sekunder *P. fluorescens* konsentrasi 20 ml/L dan metabolit sekunder *Trichoderma* konsentrasi 30 ml/L+metabolit sekunder *P. fluorescens* konsentrasi 30 ml/L. Hasil penelitian menunjukkan bahwa perlakuan metabolit sekunder *Trichoderma* sp. dan *P. fluorescens* baik tunggal maupun kombinasi berpotensi dalam menekan pertumbuhan koloni *O. theobroma* di laboratorium, tetapi kurang efektif dalam mengendalikan VSD di lapangan. Pemberian metabolit sekunder *Trichoderma* sp., *P. fluorescens* maupun kombinasi keduanya pada media PDA mampu menghambat pertumbuhan koloni patogen *O. theobroma* di laboratorium secara berturut-turut sebesar 92,55%, 72,05% dan 63,6%; tidak berpotensi dalam menekan keparahan penyakit VSD hanya mencapai 8,89%-22,26%; berpotensi dalam meningkatkan jumlah buah tanaman kakao seperti pada P1 sebesar 37%, P2 sebesar 67% dan P3 sebesar 25% dan tidak ada interaksi antara perlakuan dan konsentrasi metabolit sekunder *Trichoderma* sp., *P. fluorescens* baik tunggal maupun kombinasi terhadap semua parameter yang diamati di lapangan.

**Kata Kunci :** Metabolit sekunder, *Trichoderma* sp., *Pseudomonas fluorescens*, penyakit pembuluh kayu (*Vascular Streak Dieback*).

## ABSTRACT

**Christina Oktora Matondang. 2024.** “Potential Secondary Metabolites of *Trichoderma* sp. and *Pseudomonas fluorescens* in Controlling Vascular Streak Dieback in Cocoa Plants (*Theobroma cacao* L.)”, supervised by Syamsafitri and Nurhayati. This study aims to evaluate the potential or ability of secondary metabolites of *Trichoderma* sp. and *Pseudomonas fluorescens* in controlling Vascular Streak Dieback of cocoa plants. This research was carried out at the BBPPTP Medan Laboratory and the cocoa plantation owned by PT. Hasfarm Sukokulon Betinga Estate, Lau Mulgap Village, Finish District, Langkat Regency, North Sumatra Province in June-December 2023. Field research used a Randomized Block Design (RAK) with 2 factors, namely the type of secondary metabolite and its concentration level. There were 4 treatments with 3 concentration levels, namely control (without secondary metabolites), secondary metabolites *Trichoderma* sp. concentration 10 ml/L, secondary metabolite *Trichoderma* concentration 20 ml/L, secondary metabolite *Trichoderma* concentration 30 ml/L, secondary metabolite *P. fluorescens* concentration 10 ml/L, secondary metabolite *P. fluorescens* concentration 20 ml/L, secondary metabolite *P. fluorescens* concentration 30 ml/L, secondary metabolite *Trichoderma* concentration 10 ml/L+ secondary metabolite *P. fluorescens* concentration 10 ml/L, secondary metabolite *Trichoderma* concentration 20 ml/L+ secondary metabolite *P. fluorescens* concentration 20 ml/L and secondary metabolite *Trichoderma* concentration 30 ml/L+secondary metabolite *P. fluorescens* concentration 30 ml/L. The results showed that secondary metabolite treatment of *Trichoderma* sp. and *P. fluorescens* either alone or in combination have the potential to suppress the growth of *O. theobroma* colonies in the laboratory, but are less effective in controlling VSD in the field. The administration of secondary metabolites of *Trichoderma* sp., *P. fluorescens* or a combination of both on PDA media was able to inhibit the growth of *O. theobroma* pathogenic colonies in the laboratory respectively by 92.55%, 72.05% and 63.6%; does not have the potential to reduce the severity of VSD disease, only reaching 8.89%-22.26%; has the potential to increase the number of cocoa plants such as in P1 by 37%, P2 by 67% and P3 by 25% and there is no interaction between treatment and secondary metabolite concentrations of *Trichoderma* sp., *P. fluorescens* either alone or in combination with all parameters observed in field.

**Key Words:** secondary metabolites, *Trichoderma* sp., *Pseudomonas fluorescens*, Vascular Streak Dieback disease.