

## RINGKASAN

Penelitian ini dilaksanakan di Laboratorium Balai Besar Perbenihan dan Proteksi Tanaman Perkebunan Medan (BBPPTP) Medan, Jl. Asrama No. 124 Medan, Kel. Cinta Damai, Kec. Medan Helvetia, Provinsi Sumatera Utara. Penelitian ini telah dilaksanakan pada bulan Januari sampai dengan Februari 2025.

Penelitian ini dibimbing oleh Ibu Dr. Syamsafitri, S.P., M.P. selaku Ketua Komisi Pembimbing dan Ibu Dr. Ir. Murni Sari Rahayu, M.P. selaku Anggota Komisi Pembimbing. Penelitian ini bertujuan untuk mengetahui potensi metabolit sekunder (*Trichoderma* sp.) dalam mengendalikan penyakit gugur daun (*Pestalotiopsis*) pada tanaman karet (*Hevea brasiliensis*) di Laboratorium. Penelitian ini menggunakan menggunakan Rancangan Acak Lengkap (RAL) non-faktorial dengan 4 (empat) perlakuan dan 5 (lima) ulangan. Masing-masing ulangan terdiri atas 2 (dua) petri sehingga jumlah petri yang dipergunakan adalah 48 petri. Perlakuan tersebut adalah: P<sub>0</sub> = (Tanpa metabolit sekunder *Trichoderma* sp. / kontrol); P<sub>1</sub> = Metabolit Sekunder (*Trichoderma* sp.) (20 ml/l); P<sub>2</sub> = Metabolit Sekunder (*Trichoderma* sp.) (30 ml/l); P<sub>3</sub> = Metabolit Sekunder (*Trichoderma* sp.) (40 ml/l). Variabel pengamatan yang terdiri dari laju pertumbuhan koloni patogen *Pestalotiopsis* sp. dan persentase daya hambat (%).

Berdasarkan hasil analisis menunjukkan bahwa Metabolit Sekunder (*Trichoderma* sp.) memberikan pengaruh nyata terhadap laju pertumbuhan koloni dan daya hambat *Pestalotiopsis* sp. Perlakuan terbaik terdapat pada konsentrasi Metabolit Sekunder (40 ml/l) secara signifikan menghambat pertumbuhan jamur *Pestalotiopsis* sp., sementara media tanpa Metabolit Sekunder *Trichoderma* sp. / kontrol justru mendukung pertumbuhan terbaik. Semakin tinggi konsentrasi Metabolit Sekunder (*Trichoderma* sp.), semakin besar daya hambat yang ditunjukkan, kemungkinan karena tekanan osmotik dan kandungan bioaktif dalam media yang mengganggu metabolisme jamur *Pestalotiopsis* sp.

**Kata Kunci :** Tanaman Karet, Metabolit Sekunder *Trichoderma* sp., Penyakit Gugur Daun (*Pestalotiopsis* sp.).

## SUMMARY

*This research was conducted at the Laboratory of the Center for Estate Crops Seed and Plant Protection (BBPPTP) Medan, located at Jl. Asrama No. 124, Medan, Cinta Damai Subdistrict, Medan Helvetia District, North Sumatra Province. The study was carried out from January to February 2025.*

*This research was supervised by Dr. Syamsafitri, S.P., M.P. as Chair of the Advisory Committee and Dr. Ir. Murni Sari Rahayu, M.P. as Member of the Advisory Committee. The study aimed to determine the potential of secondary metabolites produced by *Trichoderma* sp. in controlling leaf fall disease (*Pestalotiopsis* sp.) on rubber plants (*Hevea brasiliensis*) under laboratory conditions. A completely randomized design (CRD) was used in a non-factorial arrangement, consisting of four (4) treatments with five (5) replications. Each replication used two (2) petri dishes, resulting in a total of 48 petri dishes. The treatments applied were as follows:  $P_0$  = Without *Trichoderma* sp. secondary metabolites (control);  $P_1$  = *Trichoderma* sp. secondary metabolites (20 ml/L);  $P_2$  = *Trichoderma* sp. secondary metabolites (30 ml/L);  $P_3$  = *Trichoderma* sp. secondary metabolites (40 ml/L). The observed variables included the colony growth rate of *Pestalotiopsis* sp. and the percentage of inhibition (%).*

*Based on the results of the analysis, the secondary metabolites of *Trichoderma* sp. had a significant effect on the colony growth rate and inhibition ability against *Pestalotiopsis* sp. The best treatment was observed at a concentration of 40 ml/L, which significantly inhibited the growth of *Pestalotiopsis* sp. In contrast, the medium without *Trichoderma* sp. secondary metabolites (control) supported the highest fungal growth. The higher the concentration of *Trichoderma* sp. secondary metabolites, the greater the inhibition observed, possibly due to increased osmotic pressure and the presence of bioactive compounds in the medium that disrupted the metabolism of *Pestalotiopsis* sp.*

**Keywords:** *Rubber plant, *Trichoderma* sp. secondary metabolites, Leaf fall disease (*Pestalotiopsis* sp.).*