

RINGKASAN

Pisang merupakan salah satu komoditas hortikultura yang digemari oleh masyarakat Indonesia. Upaya peningkatan produksi pisang dalam memenuhi kebutuhan dalam dan luar negeri selalu berhadapan dengan kendala. Salah satunya yaitu penyakit antraknosa yang disebabkan oleh *Colletotrichum musae*. Pengendalian yang efektif dan ramah lingkungan terhadap penyakit ini dapat dilakukan melalui pengendalian hayati dengan memanfaatkan metabolit sekunder yang dihasilkan oleh mikroba antagonis. Penelitian ini bertujuan untuk mengetahui kemampuan metabolit sekunder gabungan dua isolat *Pseudomonas fluorescens* dan dua isolat *Trichoderma* sp. dalam menekan pertumbuhan *C. musae* serta pengaruhnya terhadap masa inkubasi, luas serangan, intensitas penyakit, dan mutu buah pisang.

Penelitian dilakukan di Laboratorium Perlindungan Tanaman, Fakultas Pertanian, Universitas Jenderal Soedirman, Purwokerto selama empat bulan, mulai bulan Desember 2015 sampai dengan bulan Maret 2016. Penelitian menggunakan Rancangan Acak Lengkap pada uji *in vitro* dan Rancangan Acak Kelompok pada uji *in vivo* dengan 5 perlakuan dan lima ulangan, pada uji *in vivo* masing-masing unit perlakuan menggunakan 3 buah pisang. Perlakuan terdiri atas kontrol, metabolit sekunder *Trichoderma* sp. isolat jahe dan metabolit sekunder *P. fluorescens* P60, metabolit sekunder *Trichoderma* sp. isolat bawang merah dan metabolit sekunder *P. fluorescens* P60, metabolit sekunder *Trichoderma* sp. isolat jahe dan metabolit sekunder *P. fluorescens* P32, serta metabolit sekunder *Trichoderma* sp. isolat bawang merah dan metabolit sekunder *P. fluorescens* P32. Variabel pada uji *in vitro* yaitu tingkat penghambatan antagonis, variabel pada uji *in vivo* yaitu masa inkubasi, intensitas penyakit, luas serangan, serta mutu buah yang meliputi kekerasan, kadar gula, dan uji organoleptik.

Hasil penelitian menunjukkan bahwa perlakuan metabolit sekunder *Trichoderma* sp. isolat jahe + metabolit sekunder *P. fluorescens* P60 dan metabolit sekunder *Trichoderma* sp. isolat jahe + metabolit sekunder *P. fluorescens* P32 mampu menekan pertumbuhan *C. musae* masing-masing sebesar 52,44% dan 48,89% *in vitro*, sedangkan pada uji *in vivo* metabolit sekunder *Trichoderma* sp. isolat bawang merah + metabolit sekunder *P. fluorescens* P32 mampu menekan luas serangan sebesar 19,26% dan intensitas penyakit sebesar 15,21%. Semua perlakuan metabolit sekunder belum mampu mempertahankan mutu serta kualitas warna, rasa, aroma, tekstur, dan kesukaan buah pisang lepas panen.

SUMMARY

Banana is one of preferred horticultural commodities in Indonesia. Efforts of increasing banana production in fulfilling both domestic and exported needs always dealing with problems. One of the problems is anthracnose caused by Colletotrichum musae. Effective and environmental friendly control toward this disease can be handled by the use of secondary metabolites resulted from antagonistic microorganism. This research aimed to determine the combination ability of two Pseudomonas fluorescens isolates and two Trichoderma sp. isolates in suppressing growth of C. musae and their effect on incubation period, the pathogen attack area, disease intensity and quality of banana.

This research was conducted at the Laboratory of Plant Protection, Faculty of Agriculture, Jenderal Soedirman University, Purwokerto, from December 2015 to March 2016. Completely Randomized Design was used in in vitro test and Randomized Block Design in in vivo test repeated five times with five plural, every unit had three bananas. The treatments were control, secondary metabolite of Trichoderma sp. ginger isolate and secondary metabolite of P. fluorescens P60 isolate, secondary metabolite of Trichoderma sp. shallot isolate and secondary metabolite of P. fluorescens P60 isolate, secondary metabolite of Trichoderma sp. ginger isolate and secondary metabolite of P. fluorescens P32 isolate, and secondary metabolite of Trichoderma sp. shallot isolate and secondary metabolite of P. fluorescens P32 isolate. Variables observed in in vitro tests were inhibition level, variables observed in in vivo tests were incubation period, attack area, disease intensity, and quality of the harvest that was hardness, sugar content, and organoleptic tests.

The research result indicated that secondary metabolite of Trichoderma sp. ginger isolate + secondary metabolite of P. fluorescens P60 isolate and secondary metabolite of Trichoderma sp. ginger isolate + secondary metabolite of P. fluorescens P32 were able to inhibit the pathogen growth of C. musae in vitro respectively by 52.44% and 48.89%, while in in vivo test, secondary metabolite of Trichoderma sp. shallot isolate + secondary metabolite of P. fluorescens P32 isolate were able to suppress the attack area as 19,26% and disease intensity as 15,21%. All secondary metabolite plural have not been able to maintain the quality and color, flavor, flavour, texture, and favorite postharvest banana.