

INTISARI

Duku (*Lansium domesticum*) termasuk komoditi penting di Provinsi Sumatera Selatan, dikarenakan Sumatera Selatan merupakan sentra produksi duku terbesar di Indonesia. Produksi buah duku di Indonesia selama beberapa tahun belakangan sempat mengalami penurunan akibat adanya epidemi layu mematikan oleh infeksi fungi patogen *Ceratocystis* sp. Penggunaan fungisida kimiawi dalam mengendalikan *Ceratocystis* sp. tidak efektif, oleh karena itu dibutuhkan alternatif lain untuk mengendalikan *Ceratocystis* sp. yaitu dengan menggunakan agen hayati berupa fungi endofit. Penelitian bertujuan mendapatkan fungi endofit potensial sebagai agen biokontrol *Ceratocystis* sp. Penelitian dilakukan di Laboratorium Sistematika Tumbuhan Fakultas Biologi UGM. Sebanyak 12 isolat berhasil diisolasi dari daun dan batang duku sehat, *Screening* uji kandungan tanin menghasilkan lima isolat yang kemudian dilanjutkan uji antagonis, didapatkan hasil fungi endofit dengan kode isolat EF2D dengan persentase inhibisi paling tinggi 77,46%, diikuti isolat EF1B 63,18%, EF1D 60,18%, EF3D dengan penghambatan moderat (52,96%) dan EF2B dengan penghambatan rendah yaitu 35,73%. Interaksi fungi endofit *Lansium domesticum* terhadap fungi patogen *Ceratocystis* sp. termasuk *mycoparasitism* ditandai adanya interaksi berupa pembelitan oleh fungi endofit, terjadinya lisis pada hifa, pembengkakan dan malformasi. Tiga isolat dengan daya hambat tertinggi diidentifikasi secara molekular dan dilanjutkan uji *in vivo* pada bibit duku untuk mengamati intensitas penyakit dan laju infeksi penyakit dengan tiga perlakuan. Perlakuan A (inokulasi fungi endofit terlebih dahulu), perlakuan B (Inokulasi bersamaan) dan perlakuan C (inokulasi patogen terlebih dahulu). Berdasarkan hasil identifikasi molekular homologi EF1D 99% terkonfirmasi sebagai *Diaporthe chinensis*, EF2D 99% sebagai *Diaporthe fici-septica*, *Ceratocystis* 99% terkonfirmasi sebagai *Ceratocystis fimbriata*. EF1B belum terkonfirmasi sebagai spesies dikarenakan homologi hanya 87%. Berdasarkan hasil uji *in vivo* didapatkan bahwa intensitas penyakit dan laju infeksi perlakuan inokulasi fungi endofit dan patogen berbeda nyata terhadap kontrol. *Diaporthe fici-septica*, pada setiap perlakuan menunjukkan intensitas dan laju infeksi penyakit yang lebih rendah dibandingkan isolat lainnya. Pada pengamatan minggu kelima perlakuan A (inokulasi fungi endofit terlebih dahulu) *Diaporthe fici-septica* memiliki laju infeksi hanya sebesar 0,44 (infeksi moderat) sedangkan dua isolat lainnya memiliki laju infeksi sebesar 0,69 (infeksi tinggi). Oleh karena itu, dari 12 isolat fungi endofit, *Diaporthe fici-septica* menunjukkan potensi terbaik sebagai agen biokontrol *Ceratocystis* penyebab penyakit layu mematikan pada duku.

Kata Kunci: Fungi Endofit, *Ceratocystis* sp., Daya Hambat, Uji Antagonis, Laju infeksi

ABSTRACT

*Duku (Lansium domesticum Corr. var. duku) is an important commodity in South Sumatra Province, because South Sumatra is the largest duku production center in Indonesia. Duku fruit production in Indonesia has decreased in recent years due to a deadly wilt epidemic caused by the pathogenic fungus Ceratocystis sp. The use of chemical fungicides to control Ceratocystis sp. is ineffective, therefore, other alternatives are needed to control Ceratocystis sp., namely by using biological agents in the form of endophytic fungi. The aim of this study was to obtain potential endophytic fungi as biocontrol agents for Ceratocystis sp. The research was conducted at the Laboratory of Plant Systematics, Faculty of Biology, UGM. A total of 12 isolates were successfully isolated from healthy langsung leaves and stems. Screening of tannin content test resulted in five isolates which were then continued with antagonist test, obtained the results of endophytic fungi with isolate code EF2D with the highest inhibition percentage of 77.46%, followed by isolate EF1B 63.18%, EF1D 60.18%, EF3D with moderate inhibition (52.96%) and EF2B with low inhibition of 35.73%. The interaction of endophytic fungi *Lansium domesticum* against pathogenic fungi *Ceratocystis* sp. including mycoparasitism is characterized by interactions in the form of winding by endophytic fungi, lysis of hyphae, swelling and malformation which indicates the occurrence of direct interactions between endophytic fungi and pathogens (mycoparasitism). Three isolates with the highest inhibitory power were identified molecularly and continued with in vivo tests on langsung seedlings to observe the disease intensity and infection rate with three treatments, namely treatment A (endophytic fungi inoculation first), treatment B (simultaneous inoculation) and treatment C (pathogen inoculation first). Based on the results of molecular identification, EF1D homology was 99% identified as *Diaporthe chinensis*, EF2D 99% as *Diaporthe fici-septica*, *Ceratocystis* 99% identified as *Ceratocystis fimbriata*. EF1B has not been confirmed as a species due to 87% homology (<97%). Based on the results of in vivo tests, it was found that the disease intensity and infection rate of endophytic fungi and pathogen inoculation treatments were significantly different from the control. *Diaporthe fici-septica*, in each treatment showed lower disease intensity and infection rate compared to other isolates. In the fifth week of observation of treatment A (first inoculation of endophytic fungi) *Diaporthe fici-septica* had an infection rate of only 0.44 (moderate infection) while the other two isolates had an infection rate of 0.69 (high infection) hence from 12 isolate, *Diaporthe fici-septica* has potential as Biocontrol of *Ceratocystis* causes Deadly wilt disease in Duku.*

Keywords: Endophytic Fungi, *Ceratocystis* sp. Inhibition, Antagonist Test, Infection rate