# Isolasi, Identifikasi, Skrining dan Penghambatan Kapang Rizosfer terhadap Fusarium oxysporum f.sp. lycopersici = Isolation, identification, screening and inhibition rizhosphere mould against Fusarium oxysporum f.sp lycopersici

Riajeng Kristiana, author



---

Abstrak

ABSTRAK<br>
Kapang rizosfer mempunyai kemampuan menghambat
Fusarium oxysporum f.sp. lycopersici (Sacc.) W.C. Snyder & H.N. Hans.
penyebab penyakit layu pada tanaman tomat (Lycopersicon esculetum Mill.).
Kapang rizosfer diisolasi dari daerah perakaran tanaman tomat di lahan
konvensional Desa Cikahuripan dan Sukamulya, Sukabumi. Tujuh belas spesies
yang antagonis terhadap F. oxysporum f.sp. lycopersici telah diidentifikasi dari 47
isolat yang diisolasi dan 2 isolat koleksi LIPI MC. Mekanisme antagonis untuk
mengendalikan patogen terlihat beragam dari tiap spesies kapang rizosfer.
Kompetisi dengan kapang patogen terlihat pada Trichoderma sp. dan Mucor sp.
Semua isolat kapang rizosfer memproduksi agen antifungi volatil bukan HCN dan
tidak dapat memproduksi enzim kitinase. Kapang rizosfer memproduksi agen
antifungi non-volatil iturin yaitu Aspergillus fumigatus Fres., Aspergillus niger
Van Tieghem, dan 2 isolat Aspergillus sp. Enzim protease diproduksi oleh
A. fumigatus, Aspergillus sp., Fusarium oxysporum Schlecht, dan
Humicola fuscoatra Traaen. Aspergillus niger dan Penicillium sp., merupakan
kapang rizosfer yang memproduksi agen antifungi non-volatil dan volatil terhadap
patogen. Baik pada suspensi konidia patogen yang disimpan 4° C dan tidak
disimpan dalam lemari pendingin yang diberi agen antifungi non-volatil
Aspergillus niger (1:1) memperlihatkan persentase hambatan pertumbuhan
konidia patogen tertinggi masing-masing 77,97 % dan 76,08 % pada pengamatan
jam ke-8. Agen antifungi non-volatil Aspergillus niger pada berbagai konsentrasi
meningkatkan perkecambahan tomat masing-masing 4,17 % pada benih tomat
yang diberi filtrat atau suspensi konidia patogen yang diinkubasi selama 30 menit.
Sedangkan waktu inkubasi 60 menit, agen antifungi non-volatil A. niger pada
berbagai konsentrasi meningkatkan perkecambahan tomat 5,25 %?21,04 % pada
benih tomat yang diberi suspensi konidia patogen dan menurunkan
perkecambahan tomat 6,38 %?13,04 % pada benih tomat yang diberi filtrat
patogen. Perpanjangan waktu inkubasi 30 menit menghambat selama 4 hari
kolonisasi patogen pada tomat yang diberi campuran filtrat atau suspensi konidia
patogen dan agen antifungi non-volatil A. niger pada berbagai konsentrasi. Agen
antifungi volatil dari Penicillium sp. dapat menghambat perkecambahan konidia
patogen sebesar 22,07 %.

<hr>
Abstract<br>
Rhizosphere moulds have activities to reduce the growth of Fusarium oxysporum f.sp. lycopersici (Sacc.) W.C. Snyder & H.N. Hans, the causal pathogen of wilt disease of tomato (Lycopersicon esculentum Mill.) plant. Moulds were isolated from rhizosphere of tomato plants growing in the Villages of Cikahuripan and Sukamulya, Sukabumi. Seventeen species that have antagonistic effect to F. oxysporum f.sp. lycopersici were identified from 47 isolates isolated from rhizosphere of tomato plant and 2 isolates of LIPI MC collection. Antagonistic mechanism for control the pathogen seemed different from each species of the rhizosphere moulds. Competition with the pathogen was produced by Trichoderma sp. and Mucor sp. All isolates of the rhizosphere moulds produced non-HCN volatile antifungal agent and did not produced chitinase enzyme. Rhizosphere moulds that produced iturin non-volatile antifungal agent were Aspergillus fumigatus Fres., Aspergillus niger Van Tieghem, and 2 isolates of Aspergillus sp. Protease enzyme was produced by A. fumigatus, Aspergillus sp., Fusarium oxysporum Schlecht, and Humicola fuscoatra Traaen. Aspergillus niger and Penicillium sp. were rhizophere moulds that produced non-volatile and volatile antifungal agents respectively against the pathogen. Both on the suspension of the pathogen conidia stored in 4° C and unstored in refregerator that given non-volatile antifungal agent of A. niger (1 : 1) showed the highest percent inhibition of the pathogen conidia respectively 77.97 % and 76.08 % in observation to-8 hours. Non-volatile antifungal agent of A. niger at various consentrations increased the germination of tomato respectively at 4.17 % on tomato that given the filtrate or suspension of conidia of the patogen at 30 minutes incubation. While in the incubation time of 60 minutes, non-volatile antifungal agent of A. niger at various concentration increased the germination of tomato at 5.25 %─21.04 % on tomato that given suspension of conidia of the pathogen and decreased the germination of tomato at 6.38 %─13.04 % on tomato that given the pathogen filtrate. Extending of incubation time for 30 minutes 4 days delayed the colonization of the pathogen on tomato that given a mixture of the filtrate or the suspension of the pathogen conidia and non-volatil antifungal agent of A. niger at various concentrations. The volatile antifungal agent of Penicillium sp. decreased the germination of conidia of the patogen at 22.07 %.