

RESPONS KETAHANAN TEMBAKAU TERHADAP TOBAMOVIRUS DENGAN AGENS HAYATI SEBAGAI INDUSER

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ABSTRAK

Tobamovirus merupakan salah satu patogen penting yang menyebabkan penurunan kuantitas dan kualitas pada budidaya tembakau cerutu. Salah satu alternatif pengendalian penyakit ini menggunakan agens hayati pengkoloni akar yaitu *Bacillus* spp., *Streptomyces* spp., dan jamur mikoriza. Penelitian bertujuan untuk mengetahui efektifitas dan mekanisme agens hayati secara tunggal dan kombinasi dalam menginduksi ketahanan tanaman tembakau cerutu varietas F1 (TV38xG) di rumah kaca. Agens hayati diaplikasikan pada perakaran tembakau saat penyemaian benih, pembibitan dan pindah tanam. Inokulasi virus dilakukan 10 hari setelah pindah tanam. Hasil penelitian menunjukkan bahwa perlakuan *Bacillus* spp., *Streptomyces* spp., dan jamur mikoriza secara tunggal, dan kombinasi mampu menunda timbulnya gejala 6 hari dan menurunkan intensitas penyakit mosaik berturut-turut 26%, 23%, 15%, dan 10%. Induksi ketahanan terbentuk melalui peningkatan aktivitas enzim peroksidase pada perlakuan Jamur mikoriza 29,27%, *Bacillus* spp. 20,65%, *Streptomyces* spp. 11,10%. Peningkatan aktivitas enzim peroksidase tidak diikuti dengan lignifikasi pada daun tembakau terinfeksi Tobamovirus. Analisis protein dengan SDS-PAGE pada tanaman tembakau diperoleh adanya perbedaan profil dan ukuran pita protein. Ditemukan pita protein berukuran 17 kDa dan 30 kDa pada tembakau yang terinfeksi tobamovirus yang tidak ditemukan pada tembakau sehat. Pada tanaman yang diinokulasi virus dan diberi perlakuan *Bacillus* spp., *Streptomyces* spp., dan jamur mikoriza secara tunggal terjadi peningkatan tinggi tanaman 53,71%, jumlah daun 57%, diameter batang 29,40%, panjang akar 60,77%. berat segar akar 229,48%, berat kering akar 515,48%, berat segar batang 172,49%, berat kering batang 254,18%, berat segar daun 196,90%, dan berat kering daun 265,31%.

Kata kunci : Agens hayati, Induksi Ketahanan, SDS-PAGE, Tembakau, Tobamovirus.

TOBACCO RESISTANCE RESPONSE TO TOBAMOVIRUS WITH BIOLOGICAL AGENT AS INDUCER

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Abstract

Tobamovirus is one of the important pathogen that cause the decrease of quantity and quality in cigar tobacco cultivation. One of the alternative control of this disease is using Rhizospher biological agents such as *Bacillus* spp., *Streptomyces* spp., and mycorrhizal fungi. This study aims to determine the effectiveness and mechanism of the biological agents in single and combination in inducing the tobacco plant resistance of the F1 (TV38 x G) cigar variety in the greenhouse. The biological agents applied on the root of tobacco during seedling, nursery and transplanting. The virus inoculation was performed 10 days after transplanting. The results showed that the treatment with *Bacillus* spp., *Streptomyces* spp., and mycorrhizal fungus in single and combination capable to delaying symptoms and decrease disease intensity 26%, 23%, 15%, and 10%. Induced resistance was performed by increased peroxidase enzyme activity in the treatment of mycorrhizal fungi 29.27%, *Bacillus* spp. 20.65%, *Streptomyces* spp. 11.10%. The increased of peroxidase enzyme activity were not followed by lignification in the Tobamovirus-infected tobacco leaf. Protein analysis with SDS-PAGE in tobacco plants obtained the difference in profile and size of protein bands. Also found a protein bands measuring 17 kDa and 30 kDa in tobamovirus-infected tobacco and not found in healthy tobacco. In plants inoculated with tobamovirus and treated single *Bacillus* spp., *Streptomyces* spp., and mycorrhizal fungi increase 53.71% plant height, 57% leaf number, stem diameter 29.40%, root length 60.77%. fresh weight of roots 229.48%, root dry weight of 515.48%, fresh weight of stems 172.49%, dry weight of stems 254.18%, fresh weight of leaves 196.90%, and leaf dry weight of 265.31%.

Keywords : Biological agent, Induced resistance, SDS-PAGE, Tobacco, Tobamovirus.