Uji Aktivitas Antifungal isolat Streptomyces cellulosae terhadap Ganoderma sp. TB3 dan Ganoderma sp. TB4 = Antifungal Activity Assay of Streptomyces cellulosae terhadao Ganoderma sp. TB3 and Ganoderma sp. TB4

Nada Vanadya Zulfa, author

Abstrak

Penyakit busuk pangkal batang dan busuk akar yang disebabkan oleh jamur patogen Ganoderma merupakan penyakit yang menyebabkan kerugian pada komoditas Hutan Tanaman Industri seperti Kelapa Sawit. Pertumbuhan Ganoderma dapat dikendalikan dengan menggunakan mikroba biokontrol. Bakteri kelompok actinomycetes, dari genus Streptomyces telah banyak diteliti kemampuannya untuk menghasilkan senyawa metabolit sekunder yang bersifat antibiosis. Penelitian dilakukan untuk mengetahui pengaruh masa delayed antagonistic test yang diperpanjang, medium dan lama fermentasi isolat S. cellulosae terhadap Ganoderma sp. TB3 dan TB4. Uji Antagonistis dilakukan dengan penundaan inokulasi selama 9 hari. Aktivitas antifungal dari S.cellulosae diujikan menggunakan filtrat fermentasi berumur 10 dan 14 hari pada medium CSM broth dan PDB yang disterilisasi dengan autoklaf dan membrane filter. Filtrat fermentasi terpilih dengan hambatan terbaik diekstraksi dan diujikan terhadap Ganoderma sp. pada konsentrasi 5.000, 10.000, 20.000 dan 40.000 ppm menggunakan metode paper disc diffusion. Aktivitas antagonistis S.cellulosae dapat menghambat pertumbuhan Ganoderma sp. TB3 (83%) dan Ganoderma sp. TB4 (85%). Filtrat S.cellulosae menunjukkan hambatan paling optimal terhadap pertumbuhan Ganoderma sp. TB3 (94%) dan TB4 (93%) bila ditumbuhkan di medium CSM broth selama 14 hari dengan teknik sterilisasi membrane filter. Uji Antibiosis dengan ekstrak kasar mulai memperlihatkan hambatan terhadap pertumbuhan terhadap Ganoderma sp. TB3 (68%) dan TB4 (47%) pada konsentrasi 20.000 ppm.

.....Basal stem rot and root rot diseases caused by pathogenic fungi Ganoderma are threatening diseases that can cause severe loss in industrial tree plantation commodities, including oil palm. The mycelial growth of Ganoderma can be managed using biological control microorganism. Bacteria from the group of Actinomycetes, namely Streptomyces has been widely researched because of their ability to produce various kinds of secondary metabolites which have antibiosis activity. This research was done to show the effect of prolonged delay antagonistic test, media and incubation period of S. cellulosae towards Ganoderma sp. TB3 and TB4. Antagonistic activity was assayed using the prolonged delay antagonistic test with a 9 days delay for Ganoderma inoculation. Antifungal activity of S.cellulosae was tested using fermentation filtrate of the isolate which had been grown for 10 and 14 days in CSM broth and PDB media by still culture method. Filtrates were sterilized using autoclave and membrane filter. The filtrate with highest inhibition activity was extracted and tested against Ganoderma at a concentration of 5.000, 10.000, 20.000 and 40.000 ppm using the paper disc diffusion method. Antagonistic activity of S.cellulosae can inhibit the growth of Ganoderma sp. TB3 (83%) and TB4 (85%). Culture filtrate from CSM broth at 14 days fermentation with membrane filter sterilization technique exhibited the maximum inhibition to Ganoderma sp. TB3 (94%) and TB4 (93%). Antibiosis assay of crude extract started to show 68% inhibition of Ganoderma sp. TB3 and 47% of Ganoderma sp. TB4 at a concentration of 20.000 ppm.