

ABSTRAK

POTENSI BIOKONTROL ISOLAT *Trichoderma* sp. (T14 dan T7834) SEBAGAI ANTIPATOGEN JAMUR *Phytophthora* sp. dan *Colletotrichum* sp. SECARA *IN VITRO*

Oleh

Nouriza Agfa Pramesti

Berbagai macam penyakit yang disebabkan oleh jamur patogen menjadi masalah utama dalam budidaya tanaman karena menyebabkan kerusakan pada tanaman sehingga menyebabkan kerugian ekonomi yang signifikan. Salah satu cara untuk menangani hal tersebut yaitu melakukan pengendalian hayati dengan mengaplikasikan agen biokontrol berupa jamur *Trichoderma* sp. karena memiliki sifat antagonisme terhadap patogen. Genus ini diketahui efektif menekan pertumbuhan *Phytophthora* sp. dan *Colletotrichum* sp. Penelitian ini bertujuan untuk mengetahui grafik pertumbuhan isolat *Trichoderma* (T14 dan T7834) dari berat kering miselium, mengetahui potensi isolat *Trichoderma* sp. (T14 dan T7834) sebagai agen biokontrol antipatogen jamur secara *in vitro* dengan uji kompatibilitas dan melalui aktivitas enzim lipolitik serta kitinolitiknya. Hasil penelitian menunjukkan grafik pertumbuhan isolat *Trichoderma* (T14 dan T7834) melalui biomassa kering miseliumnya yang diawali dengan penambahan berat kering miselium pada hari ke-3, lalu pada hari ke-3 - hari ke-12 berat kering miselium bertambah dengan pesat, dilanjutkan dengan hari ke-12 - hari ke-21 berat kering miselium mengalami penambahan namun konstan, kemudian pada hari ke-24 - hari ke-30 berat kering miselium mengalami penurunan tiap harinya. Hasil uji kompatibilitas *Trichoderma* (T14 dan T7834) efektif dan mampu dijadikan sebagai agen biokontrol untuk mengendalikan *Phytophthora* sp. dan *Colletotrichum* sp. secara *in vitro*. Akan tetapi *Trichoderma* T7834 tidak mampu menghambat pertumbuhan *Colletotrichum*, sehingga kurang efektif dijadikan sebagai agen biokontrol. Hasil uji aktivitas enzim, *Trichoderma* (T14 dan T7834) mampu menghasilkan enzim lipase tetapi tidak mampu menghasilkan enzim kitinase pada metode gravimetri, sehingga kedua isolat tersebut berpotensi menjadi kandidat jamur biokontrol *Phytophthora* sp. dan *Colletotrichum* sp.

Kata kunci: *Trichoderma*, patogen, pertumbuhan, enzim, kompatibilitas

ABSTRACT

BIOCONTROL POTENTIAL OF *Trichoderma* sp. ISOLATE. (T14 and T7834) AS ANTIPATHOGEN FOR FUNGI *Phytophthora* sp. and *Colletotrichum* sp. IN VITRO

By

Nouriza Agfa Pramesti

Various kinds of diseases caused by pathogenic fungi are a major problem in plant cultivation because they cause damage to plants, causing significant economic losses. One way to deal with this is to carry out biological control by applying a biocontrol agent in the form of the fungus *Trichoderma* sp. because it has antagonism against pathogens. This genus is known to be effective in suppressing the growth of *Phytophthora* sp. and *Colletotrichum* sp. This study aims to determine the growth graph of *Trichoderma* isolates (T14 and T7834) from the dry weight of mycelium, determine the potential of *Trichoderma* sp isolates. (T14 and T7834) as fungal antipathogenic biocontrol agents in vitro with compatibility tests and through their lipolytic and chitinolytic enzyme activities. The results of the research show a graph of the growth of *Trichoderma* isolates (T14 and T7834) through the dry biomass of their mycelium which begins with an increase in the dry weight of the mycelium on the 3rd day, then on the 3rd - 12th day the dry weight of the mycelium increases rapidly, continuing with the following days. On the 12th - 21st day the dry weight of the mycelium increased but was constant, then on the 24th - 30th day the dry weight of the mycelium decreased every day. The results of the *Trichoderma* compatibility test (T14 and T7834) are effective and can be used as a biocontrol agent to control *Phytophthora* sp. and *Colletotrichum* sp. in vitro. However, *Trichoderma* T7834 is not able to inhibit the growth of *Colletotrichum*, so it is less effective as a biocontrol agent. The results of the enzyme activity test, *Trichoderma* (T14 and T7834) were able to produce the lipase enzyme but were unable to produce the chitinase enzyme using the gravimetric method, so these two isolates had the potential to become candidates for the biocontrol fungus *Phytophthora* sp. and *Colletotrichum* sp.

Key words: *Trichoderma*, pathogen, growth, enzyme, compatibility