

## Intisari

### INTERAKSI AGEN PENGENDALI HAYATI *Trichoderma* sp. DAN PATOGEN *Fusarium oxysporum* f.sp. *lycopersici* MELALUI SENYAWA ORGANIK VOLATIL

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Agen pengendali hayati *Trichoderma* sp. dikenal efektif menghambat pertumbuhan patogen dan memacu pertumbuhan tanaman baik melalui metabolit sekunder maupun senyawa organik volatil (VOC) yang dihasilkan. Penelitian ini bertujuan untuk melihat mekanisme interaksi *Trichoderma* sp. dan *Fusarium oxysporum* f.sp. *lycopersici* (Fol) melalui senyawa organik volatil dan pengaruhnya terhadap pertumbuhan tanaman tomat. Penelitian menggunakan dua strain *Trichoderma* sp. yaitu strain Lab 5 dan Lab 6 serta *Fusarium oxysporum* f.sp. *lycopersici* digunakan dalam penelitian ini. Pengujian interaksi melalui VOC dilakukan dengan menggunakan sistem penyatuan bagian bawah dari dua cawan Petri berdiameter 90 mm yang memungkinkan pemisahan secara fisik antara *Trichoderma* dan Fol. Pengamatan pertumbuhan Fol dan tomat serta ultrastruktur Fol dan *Trichoderma* dilakukan dengan mikroskop scanning electron. Hasil penelitian menunjukkan bahwa strain Lab 5 dan Lab 6 melalui VOC menghambat pertumbuhan dan pembentukan pigmen Fol, dan juga menghambat pertumbuhan tomat. *Trichoderma* sp. dan Fol saling berinteraksi melalui VOC yang menyebabkan kerusakan miselia yang lebih parah pada *Trichoderma* sp. dibandingkan kerusakan pada Fol. Hasil ini mengindikasikan pentingnya VOC dalam interaksi antara agen pengendali hayati *Trichoderma* sp, pathogen tanaman Fol dan pertumbuhan tanaman.

Kata kunci : *Trichoderma* sp., *Fusarium oxysporum* f.sp. *lycopersici*, *Solanum lycopersicum* var. *cerasiforme*, senyawa organik volatil, Interaksi

## **Abstract**

### **INTERACTION OF BIOLOGICAL CONTROL AGENT *Trichoderma* sp. AND PATHOGEN *Fusarium oxysporum* f.sp. *lycopersici* THROUGH VOLATILE ORGANIC COMPOUND**

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Biological control agent *Trichoderma* sp. known to be effective in inhibiting pathogen growth and promoting plant growth through production of secondary metabolites and volatile organic compounds (VOCs). This study aims to elucidate the mechanism of interaction of *Trichoderma* sp. and *Fusarium oxysporum* f.sp. *lycopersici* (Fol) through volatile organic compounds and their effect on the growth of tomato plants. Two strains of *Trichoderma* sp. namely strain Lab 5 and Lab 6 and *Fusarium oxysporum* f.sp. *lycopersici* was used in this study. Tests of interaction via VOCs were carried out using a system of merging of two lower Petri dishes with a diameter of 90 mm which allowed physical separation between *Trichoderma* sp. and Fol. Observation of Fol and tomato growth as well as Fol and *Trichoderma* sp. ultrastructures were carried out using scanning electron microscopy. The results showed that Lab 5 and Lab 6 strains through VOCs inhibited the growth and formation of Fol pigments, and also inhibited tomato growth. *Trichoderma* sp. and Fol interacts through VOCs which causes more severe mycelia damage in *Trichoderma* sp. compared to damage to Fol. These results indicate the importance of VOCs in interactions between biological control agents *Trichoderma* sp, Fol and plant growth.

**Keywords:** Interactions, biological control agents *Trichoderma* sp., *Fusarium oxysporum* f.sp. *lycopersici*, volatile organic compounds, Tomatoes