

## INTISARI

### KERUSAKAN ULTRASTRUKTUR DAN PENGHAMBATAN PERTUMBUHAN MISELIUM *Ganoderma boninense* OLEH SENYAWA ORGANIK VOLATIL DARI *Nocardiopsis* sp. GME01 DAN GME22

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*Nocardiopsis* sp. GME01 dan GME22 merupakan koleksi aktinomisetes Laboratorium Mikrobiologi Pertanian, Fakultas Pertanian, Universitas Gadjah Mada yang merupakan kontaminan pada kultur *Streptomyces*. Isolat tersebut diketahui mempunyai kemampuan menghambat *Fusarium oxysporum* melalui senyawa organik volatil (SOV). Meskipun demikian hingga saat ini SOV yang dihasilkan kedua bakteri tersebut belum teridentifikasi. Selain itu aktivitas antifungal SOV dari *Nocardiopsis* terhadap *Ganoderma boninense* belum diketahui. Penelitian ini bertujuan untuk mengevaluasi potensi *Nocardiopsis* sp. GME01 dan GME22 dalam menghambat *Ganoderma boninense* melalui SOV. Di dalam penelitian ini dilakukan uji aktivitas antifungal SOV *Nocardiopsis* sp. GME22 dan GME01 terhadap *Ganoderma boninense* menggunakan metode *inverted petri dish* dan identifikasi terhadap SOV kedua bakteri menggunakan metode SPME-GC-MS. SOV *Nocardiopsis* sp. GME22 dan GME01 mampu menghambat pertumbuhan *Ganoderma boninense* sebesar 62,6% dan 52,1% secara berturut turut. Analisis SPME-GC-MS mengungkap perbedaan profil SOV dari kedua *Nocardiopsis* yang berkontribusi pada perbedaan aktivitas penghambatan. *Nocardiopsis* sp. GME01 dan GME22 mampu menghambat pertumbuhan *Ganoderma boninense* melalui senyawa organik volatil.

Kata kunci: Aktivitas antifungal, *Ganoderma boninense*, *Nocardiopsis*, Senyawa Organik Volatil (SOV)

### ABSTRACT

#### *Nocardioopsis* sp. GME01 AND GME22 VOLATILES ADVERSELY AFFECT THE ULTRASTRUCTURE AND GROWTH OF *Ganoderma boninense* MYCELIUM

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*Nocardioopsis* sp. GME01 and GME22 are actinomycetes collection that were isolated as *Streptomyces* culture contaminant. Previous study revealed that *Nocardioopsis* sp. GME01 and GME22 were able to inhibit growth of *Fusarium oxysporum* through volatile organic compound (VOC). To date, however there has been no data of *Nocardioopsis* sp. GME01 and GME22 VOC's and on their specific antifungal properties against *Ganoderma boninense*. This study was conducted to evaluate the inhibitory action of *Nocardioopsis* sp. GME01 and GME22 against *Ganoderma boninense*. The antifungal activity of *Nocardioopsis* sp. GME01 and GME22 against *Ganoderma boninense* were determined by employing inverted petri dish method, and through the analysis of their volatile organic compounds (VOC) by using SPME-GC-MS. The result of this study demonstrated that *Nocardioopsis* sp. GME22 and GME01 VOC's were able to inhibit growth of *Ganoderma boninense* by 62,6% and 52,1% respectively. SPME-GC-MS analysis revealed differences of VOC profiles on both *Nocardioopsis*, which contributed to differences in inhibitory activity. Therefore, it is shown that *Nocardioopsis* sp. GME01 and GME22 were able to inhibit growth of *Ganoderma boninense* through volatile organic compounds.

Keywords: Antifungal activity, *Ganoderma boninense*, *Nocardioopsis*, Volatile Organic Compound (VOC)