INTISARI

G. boninense merupakan patogen penting pada kelapa sawit. Pengendalian penyakit busuk pangkal batang dengan fungisida sintetik dapat menyebabkan pencemaran lingkungan dan resistensi patogen sehingga diperlukan teknik pengendalian yang lebih ramah lingkungan. Penelitian ini bertujuan untuk mengetahui potensi *Streptomyces* spp. sebagai agens antagonis terhadap *G. boninense* melalui karakterisasi morfologi isolat pada medium ISP 7 (*International Streptomyces Project*), identifikasi *Streptomyces* spp dengan primer StrepB/StrepE, dan uji antagonis. Lima isolat dengan persentase penghambatan terbaik digunakan untuk uji produksi enzim pendegradasi; pengaruh senyawa volatil organik dan filtrat bakteri terhadap pertumbuhan *G. boninense*; identifikasi senyawa antifungal dengan metode GC-MS dan LC-MS/MS; uji sinergisme; dan uji antagonis kombinasi bakteri. Dari hasil isolasi diperoleh 20 isolat dengan karakteristik morfologi yang berbeda-beda pada medium ISP7. Hasil identifikasi dengan PCR menunjukkan semua isolat merupakan kelompok *Streptomyces*. Hasil uji antagonis menunjukkan persentase penghambatan antara 4,86-73,61% dengan isolat P-I1; P-I2; P-I5; P-NI1; dan P-NI3 menunjukkan persentase penghambatan paling tinggi. Kelima isolat tersebut mampu memproduksi enzim pendegradasi. Hasil uji pengaruh senyawa volatil organik dan filtrat bakteri menunjukkan persentase penghambatan antara 44,33-50,42% dan 37,54-50,87%. Uji antagonis kombinasi bakteri menunjukkan persentase penghambatan antara 49,97-79,86%. Selain itu, kelima isolat dapat memproduksi senyawa antifungal.

Kata kunci: *G. boninense*, *Streptomyces*, antagonis, senyawa antifungal, kombinasi bakteri

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ABSTRACT

G. boninense is an important pathogen on oil palm causing Basal Stem Rot (BSR). Disease management using synthetic fungicides causing environmental pollution and pathogen resistance. Therefore, environmentally friendly control technique is needed. This study aimed to determine the potential of *Streptomyces* spp. as antagonistic agents against *G. boninense.* These included study on morphology characterization of isolates on ISP 7 medium (International *Streptomyces* Project), identifying of *Streptomyces* spp. using StrepB/StrepF primers, and antagonistic tests. Five isolates had best inhibition percentage were selected for degrading enzymes production tests; effect of volatile organic compounds and bacterial filtrates on *G. boninense* growth; identification of antifungal compounds by GC-MS and LC-MS/MS methods; synergism tests; and bacterial combination antagonist tests. The isolation obtained 20 isolates with different morphological characteristics on ISP7 medium. Identifying results with PCR showed all isolates were *Streptomyces*. The antagonist test results showed inhibition percentage between 4.86-73.61% with the isolates of P-I1; P-I2; P-I5; P-NI1; and P-NI3 had the highest inhibition percentage. The five isolates produced degrading enzymes. The effect of VOC and bacterial filtrate assay showed the inhibition ranged between 44.33-50.42% and 37.54-50.87%. The bacterial combination antagonist test showed the nhibition percentage ranged between 49.97-79.86%. Furthermore, the five isolates produced antifungal compounds.

Keyword: *G. boninense*, *Streptomyces*, antagonist, antifungal compounds, bacteria combination

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