

RINGKASAN

Tanaman pisang kebanyakan tumbuh di daerah tropis termasuk Indonesia. Salah satu kendala dalam usahatani pisang adalah adanya patogen yang menyebabkan berbagai penyakit seperti layu pisang. Penyakit layu pisang umumnya disebabkan oleh jamur patogen *Fusarium oxysporum* (disebut penyakit layu fusarium) dan *Ralstonia solanacearum* (penyebab penyakit layu bakteri). Pengendalian secara biologi terhadap layu pisang dapat dilakukan dengan memanfaatkan peran mikroba antagonis khususnya bakteri endofit.

Tujuan penelitian ini yaitu untuk mendapatkan isolat bakteri endofit dari akar tanaman pisang (*Musa* sp.), mengetahui kemampuan bakteri endofit akar tanaman pisang (*Musa* sp.) dalam menghambat pertumbuhan mikroba patogen secara *in vitro* dan mengetahui identitas isolat bakteri endofit akar tanaman pisang (*Musa* sp.) yang menghambat pertumbuhan mikroba patogen. Metode penelitian yang dilakukan adalah menggunakan metode survey. Teknik pengambilan sampel dilakukan dengan *purposive random sampling*. Tahapan penelitian meliputi pengambilan sampel akar, sterilisasi sampel akar menggunakan NaOCl₃ 2%, isolasi bakteri endofit akar tanaman pisang pada medium NA, uji kemampuan penghambatan bakteri endofit terhadap mikroba patogen tanaman secara *in vitro* menggunakan ujiantang pada medium NA dan PDA dan karakterisasi isolat bakteri endofit potensial dilakukan secara konvensional. Data yang diperoleh dianalisis secara deskriptif.

Hasil penelitian ini yaitu didapatkan 9 isolat bakteri endofit akar tanaman pisang. Isolat bakteri endofit PA, PC, PD, PE, PH dan PI mampu menghambat pertumbuhan *F. oxysporum* dan *R. solanacearum*, Isolat PB hanya mampu menghambat pertumbuhan *F. oxysporum*, isolat PG hanya mampu menghambat pertumbuhan *R. solanacearum*, sedangkan isolat PF tidak mampu menghambat pertumbuhan *F. oxysporum* maupun *R. solanacearum*. Hasil karakterisasi isolat potensial berdasarkan *Bergey's Manual of Determinative Bacteriology 9th edition*. menunjukkan bahwa satu isolat (PA) termasuk spesies anggota genus *Enterobacter*, 4 isolat (isolat PB, PE, PG dan PI) spesies anggota genus *Bacillus*, 2 isolat (PC dan PD) spesies anggota genus *Lactobacillus* dan satu isolat lainnya (PH) termasuk spesies anggota genus *Micrococcus*.

Kata Kunci: *Musa* sp.; Bakteri endofit; Agensia antagonis; Mikroba patogen.

SUMMARY

Banana plants mostly grow in tropical area including Indonesia. One of obstacles in planting banana is the presence of pathogen which can cause various diseases such as wilt banana. Wilt banana is commonly caused by pathogenic fungus of *Fusarium oxysporum* (called wilt fusarium disease) and *Ralstonia solanacearum* (called wilt bacteria disease). Biological control on wilt banana can be implemented by utilizing the role of antagonistic microbes especially endophytic bacteria.

The purposes of this research were to obtain isolates of endophytic bacteria from the roots of banana plants (*Musa* sp.), to know the ability of endophytic bacteria from the roots of banana plants (*Musa* sp.) capable of inhibiting the growth of pathogenic microbes *in vitro* and to find out the identity potential endophytic bacteria isolated from the roots of banana plants (*Musa* sp.) inhibiting the growth of pathogenic microbes. The research using a survey method. The sampling technique was done by purposive random sampling. The research stages included sampling of roots, sterilization root samples using 2% NaOCl₃, inoculation of endophytic bacteria on medium NA, test the ability endophytic bacteria inhibiting the growth of plant pathogenic microbes *in vitro* on medium NA and PDA, and characterization of endophytic bacteria isolates. The obtained data were analyzed descriptively.

The results of this research obtained 9 isolates of endophytic bacteria from the roots of banana plants (*Musa* sp.). Isolates of endophytic bacteria of PA, PC, PD, PE, PH and PI were capable of inhibiting the growth of *F. oxysporum* and *R. solanacearum*, PB isolate only inhibit the growth of *F. oxysporum*, PH isolate only inhibited the growth of *R. solanacearum*, while isolates of PF and PG were unable to inhibit the growth of *F. oxysporum* and *R. solanacearum*. Identification of potential isolates based on Bergey's Manual of Determinative Bacteriology 9th edition showed that one isolate of PA was identify as species member of the genus *Enterobacter*, 4 isolates of PB, PE, PG and PI are species members of the genus *Bacillus*, 2 isolates of PC and PD were species members of the genus *Lactobacillus* and isolate of (PH) was a species member of the genus *Micrococcus*.

Key word: (*Musa* sp.); Endophytic bacteria; Antagonist agents; Pathogenic microbes.