

ABSTRAK

Bakteri endofit merupakan bakteri yang berada di dalam tanaman dan bersimbiosis dengan tanaman tanpa menimbulkan gejala. Bakteri endofit menyediakan sumber tambahan untuk tanaman karena adanya metabolit sekunder yang bermanfaat antara lain enzim ekstraseluler; *Indole Acetic Acid*; dapat melarutkan fosfat; serta bersifat antagonis bagi patogen. Penelitian ini bertujuan untuk mengisolasi dan mengkarakterisasi bakteri endofit dari tanaman melon, serta menguji kemampuan bakteri endofit sebagai agensi pengendali hayati *Acidovorax citrulli*, *Pectobacterium carotovorum* subsp. *carotovorum*, dan *Fusarium oxysporum* f.sp. *melonis*. Hasil penelitian diperoleh sebanyak 7 isolat bakteri endofit yang diisolasi dari tiga daerah di Daerah Istimewa Yogyakarta dan sekitarnya. Isolat Klt D01 mampu memproduksi enzim ekstraseluler (protease dan endoglukanase), mampu menghasilkan hormon IAA serta dapat melarutkan fosfat. Isolat KP A004 dan Klt D01 memiliki kemampuan menghambat pertumbuhan *A. citrulli*. Isolat KP A003, KP A004, KP B51 dan Klt D01 memiliki kemampuan menghambat pertumbuhan *P. carotovorum* subsp. *carotovorum*. Isolat KP A003, KP A004, KP B01, KP B51, Klt D01, and Klt D04 memiliki kemampuan menghambat pertumbuhan *F. oxysporum* f.sp. *melonis*.

Kata kunci : bakteri endofit, enzim ekstraseluler, *Indole Acetic Acid*, bakteri pelarut fosfat, agensi pengendali hayati

ABSTRACT

Endophytic bacteria is belonging to a key class of plant symbionts, living inside the plant tissue without causing any symptoms of disease to the host. Endophytic bacteria provide an additional resource to the plant due to the presence of beneficial secondary metabolites such as extracellular enzyme; *Indole Acetic Acid*; phosphate solubilizing; and be antagonistic to pathogen. This research aimed to isolate and characterize endophytic bacteria in melon, and to observe the antagonicity of endophytic bacteria as biological control againsts *Acidovorax citrulli*, *Pectobacterium carotovorum* subsp. *carotovorum*, and *Fusarium oxysporum* f.sp. *melonis*. This research resulted 7 isolates of endophytic bacteria isolated from 3 regions of Daerah Istimewa Yogyakarta Province and surrounding the province. Isolate Klt D01 was able to produce extracellular enzyme (protease and endoglucanase), able to produce IAA hormone and able to solubilize phosphate. Isolates KP A004 and Klt D01 had the ability to inhibit the growth of *A. citrulli*. Isolates KP A003, KP A004, KP B51 and Klt D01 had the ability to inhibit the growth of *P. carotovorum* subsp. *carotovorum*. Isolates KP A003, KP A004, KP B01, KP B51, Klt D01, and Klt D04 had the ability to inhibit the growth of *F. oxysporum* f.sp. *melonis*.

Key words: endophytic bacteria, extracellular enzyme, *Indole Acetic Acid*, phosphate solubilizing bacteria, biological control agent