**Biocontrol of plant disease by plant growth promoting bacteria**

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Microorganisms has vital role in agriculture in order to promote the exchange of plant nutrients and reduce application of chemical fertilizer as much as possible. Plant Growth-Promoting Rhizobacteria (PGPR) is able to exert a positive effect leading plant growth. *Pseudomonas sp* with high biocontrol and plant growth promoting activity can restrict or suppress phytopathogens, especially the fungal pathogens via production of some inhibitory metabolites and siderophores directly, and promote the plant growth through some different phytohormones such as indole acetic acid. In this investigation, *Pseudomonas fluorescens* MSN57 screened and introduced as a new biocontrol and plant growth promoting rhizobacterium that is isolated from the palm tree rhizosphere in Selangor state of Malaysia. This strain was evaluated in biocontrol laboratory of Plant Protection Department at University Putra Malaysia for controlling of soilborne pathogens under *in vitro* and *in vivo* conditions. Production of salicylic acid (SA), antibiotics diacetylphloroglucinol (DAPG), siderophore, indole acetic acid (IAA), hydrogen cyanide (HCN) and phosphate solubilization activity were determined. Fungal inhibition tests were performed using plate assay. In greenhouse trials, biocontrol effects on *Pyricularia oryzae* in rice were studied. The results showed that the strain MSN57 is a promising candidate to be commercially applied in Malaysia. This isolate reduced disease index to 13.66%, with a maximum percent inhibition of radial growth (PIRG) of 52%. Greenhouse experiments showed that the plants treated with MSN57 isolate recorded maximum root length, plant height, and fresh shoot weight which were increased by 32.78 cm, 76.16 cm, and 5.84 g, respectively over the diseased control. It is worth to be considered further for developing an efficient biopesticide.

Keywords: *Pseudomonas sp*, Biocontrol, PGPR, Siderophore