



Isolation and Identification of Plant Growth Promoting Rhizobacteria from Sago Palm (*Metroxylon sagu*, Rottb.)

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Highlights

- Five PGPR isolated from *Metroxylon sagu*, Rottb. rhizosphere were tested on their plant growth promoting traits.
- Among the isolates, *Lysinibacillus sphaericus* and *Bacillus thuringiensis* were found to show significant activity in nitrogen fixing, producing IAA and solubilising phosphate.
- The study implied the isolated PGPR potentially to be used as inoculant biofertilisers, beneficial for *Metroxylon sagu*, Rottb. growth.

Isolation and Identification of Plant Growth Promoting Rhizobacteria from Sago Palm (*Metroxylon sagu*, Rottb.)

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Abstract: Plant growth promoting rhizobacteria (PGPR) are strains of naturally occurring soil bacteria that live in close vicinity to the plant's rhizosphere region which possess the capability to augment host growth. This study was conducted to isolate and identify potential PGPR isolates indigenous to *Metroxylon sagu*, Rottb. rhizosphere. These potential isolates were characterised based on their beneficial plant growth promoting (PGP) properties and identified by molecular analysis via 16S rDNA sequencing. A total of 18 isolates were successfully isolated, out of which five isolates were tested, and designated as (S1A, S2B, S3A, S3C and S42). Among the five isolates, two isolates (S2B and S3C) were found to produce high levels of indole-3-acetic acid (2.96 µg/mL and 10.31 µg/mL), able to fix nitrogen and show significant activity in phosphate solubilisation. The analysis of their sequences via National Center for Biotechnology Information (NCBI) suggested their close identity towards *Lysinibacillus sphaericus* and *Bacillus thuringiensis*. It can be concluded that the isolated PGPR possesses beneficial PGP attributes. It can be implied that the isolated PGPR are potential to be used as inoculant biofertilisers, beneficial for *Metroxylon sagu*, Rottb. growth. Hence, further studies need to be done to evaluate the effectiveness of the beneficial microbes towards sago seedlings growth, under pot experiment.

Keywords: Plant Growth Promoting Rhizobacteria, *Metroxylon sagu*, Rottb., IAA, Phosphate Solubilisation, Biofertilisers

Abstrak: Rizobakteria penggalak pertumbuhan tumbuhan adalah sejenis bakteria tanah yang hidup berdekatan rizosfera tumbuhan dan mempunyai impak berfaedah ke atas pertumbuhan tanaman. Kajian ini telah dijalankan untuk melakukan pengasingan dan pengesanan PGPR, daripada rizosfera *Metroxylon sagu*, Rottb. Bakteria endofit diasing

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