



TITLE: In vitro Growth Promoting Properties of Non-Dominant Root Symbiotic Fungi (ND-RSF) from *Drynaria quercifolia* L. and their Effects on PSB Rc10 Rice (*Oryza sativa* L.)

Name: Jomar L. Aban

Affiliation: Associate Professor at Don Mariano Marcos Memorial State University

Country: Philippines

Email ID: jaban@dmmmsu.edu.ph

ABSTRACT

Rice is the staple food for over half of world's population. In relation to this, the indiscriminate use of fertilizers and chemical pesticides for rice production may consequently destroy our natural ecosystems. As an alternative, microorganisms are used for growth promotion and biocontrol. This environmentally safe method has increased in the recent years but is still considerably underexploited. This study explored the potential growth promoting properties of non-dominant root symbiotic fungal (ND-RSF) isolates from *Drynaria quercifolia* on rice. Five molecularly identified ND-RSF isolates were selected based on their non-dominance. All ND-RSF isolates were found to produce indole-3-acetic acid (IAA) spectrophotometrically at 530 nm. The *Trichoderma scalesiae* isolate produced the highest IAA per unit volume of culture broth and the highest IAA per unit of dry weight. All the five ND-RSF isolates have phosphate solubilisation activity. Three ND-RSF isolates significantly increased total length of gibberellic acid (GA)-inhibited rice plants. The fresh weight of rice inoculated with *Aspergillus brunneoviolaceus* are significantly heavier than the negative broth and water control.

The dry weight of rice inoculated with *Aspergillus aculeatus*, *Aspergillus japonicus*, and *Aspergillus brunneoviolaceus* are significantly higher compared to the positive controls (20 PPM GA, 20 PPM IAA and non-paclobotrazol treated rice seedlings). The results indicate the ability of these three *Aspergillus* isolates to produce the hormone gibberellic acid. The ability of these ND-RSF isolates to produce growth promoting hormones auxin and gibberellic acid, plus their ability to solubilize inorganic phosphate are evidences to their potential growth promoting abilities toward their host plant. This present study also implies that these ND-RSF can be growth promoting mutualists to rice.



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BIOGRAPHY

Jomar Aban has completed his PHD at the age of 30 years from Saint Louis University, Philippines. He is a research facilitator in the Don Mariano Marcos Memorial State University, Philippines. He has over 20 publications that have been cited over 30 times, and his publications' h-index is 3. He is also a multi-awarded researcher and faculty member in several local, national, and international scientific platforms and conferences. Aside from instruction and research, he also has multi-focal functions in the University including research committee evaluation, journal associate editor, peer reviewer, research panelist and judge, external research evaluator, coordinator, workshop organizer, international research presenter and resource speaker.

Presenter Name: Jomar Aban

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Contact number: +63 927 042 7750

