

RESEARCH NOTE

Screening of Indole-3-Acetic Acid (IAA) Productions by Endophytic *Fusarium oxysporum* Isolated from *Phyllanthus niruri*

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ABSTRACT

Ten newly isolated endophytic fungi from *Phyllanthus niruri* Linn. were identified as *Fusarium oxysporum*. These isolates were screened out for their productivity of indole acetic acid (IAA) by the salkowski's method. Out of these isolates, two isolates showed high amount of indole acetic acid production, which were FO9 and FO10 with concentration of 23.52 µg/ml and 5.95 µg/ml, respectively.

Keywords: *Phyllanthus niruri*, endophytic *Fusarium oxysporum*, IAA, Salkowski's methods

Phyllanthus niruri Linn. has been reported to have several medicinal properties. This plant is popular in folk medicine for over 2000 years to treat jaundice, gonorrhoea, frequent menstruation, and diabetes and topically as a poultice for skin ulcers, sores, swelling, and itchiness (Naik & Juvekar, 2003). Fresh leaves, fruits and also whole plant can be used to treat various diseases, particularly hepatitis and other viral infection (Paithankar *et al.*, 2011).

Endophytes are microbes that colonized plant tissue while showing no external sign of infection or negative effect toward the host plant (Prasad & Dagar, 2014). Schulz and Boyle (2006) also stated that endophytes were considered mutualistic and non-pathogenic. Based from previous reports, endophytes that were isolated from medicinal plant for instance *Tinospora cordifolia*, *Calotropis procera*, *Coscinum fenestum*, and *Gynura procumbens* showed great potential (Bhore *et al.*, 2010; Goveas *et al.*, 2011; Kedar *et al.*, 2014). An example of endophyte that were considered potential is endophytic *Fusarium oxysporum*.

Based from various reports, endophytic *F. oxysporum* was known as beneficial endophytes towards the some plant (Martinuz *et al.*, 2013). This species was known able to

enhance plant growth by inducing systemic resistance towards *Radopholus similis* on banana (zum Felde *et al.*, 2009). Also, this species reported to produce phytohormone IAA (Cohen *et al.*, 2002). Phytohormone IAA is a type of plant hormone known to stimulate cell elongation by modifying certain conditions such as increasing osmotic contents of the cell, increasing permeability of water into cell, decreasing wall pressure, an increasing cell wall synthesis and inducing protein synthesis (Mohite, 2013).

Several methods were developed to identify the presence of IAA such as High-Performance Liquid Chromatography (HPLC) or Gas Chromatography (GC). Nevertheless, these methods were time consuming and tedious (Glickmann & Dessaux, 1995). Alternative simple, rapid and cheap method to detect the presence of IAA is by using Salkowski's protocol (Glickmann & Dessaux, 1995). The solution to conduct the analysis known as Salkowski's reagent as the interaction with IAA will yields a pink colour on the solution (Werner & Gainess, 1967). According to Fierro-Coronado *et al.* (2014), Salkowski's reaction has a greater specificity for detecting IAA than other tested auxins.

In this experiment, ten endophytic *F. oxysporum* that were isolated from *P. niruri*