

Full Length Research Paper

New naphthalene derivative isolated from *Diaporthe* sp. host to *Syzygium cordatum* Hochst.ex Krauss plant

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Fungal endophytes are regarded as inexhaustible sources of pharmaceuticals and agrochemicals with profound antibacterial, anticancer or antifungal activities. *Diaporthe* sp., an endophytic fungus residing in medicinal plant *S. cordatum*, showed a good antagonism against bacterial pathogens of beans; *Pseudomonas syringae* pv *phaseolicola* (*Psp*) and *Xanthomonas axonopodis* pv *phaseoli* (*Xap*), with zones of inhibitions of 14.00 ± 1.15 and 17.00 ± 0.58 mm against the test organisms respectively. Large scale fermentation of *Diaporthe* sp. was performed on rice media after which ultrasonic extraction on methanol was done to yield methanol crude extract. Methanol crude extract was then partitioned between hexane and ethyl acetate to yield their respective crude extracts. Ethyl acetate fraction of *Diaporthe* sp. yielded one new naphthalene derivative compound which was accorded IUPAC name as 3-methoxy-5-methylnaphthalene-1, 7-diol after series of purifications on column chromatography as well as preparative high-performance liquid chromatography (pHPLC). Structure determination of isolated compounds was performed on 1D and 2D Nuclear Magnetic Resonance (NMR) spectroscopy experiments as well as a mass spectrometer to affirm its molecular mass. The F3 that yielded compound 1 had palpable antibacterial activities against *Psp* and *Xap*, with corresponding Minimum Inhibitory Concentration (MIC) values of 2.50 mg/ml (7.00 ± 0.00 mm) and 1.25 mg/ml (7.67 ± 0.33 mm) against the tests organisms respectively. These slight MIC values are chiefly attributed to the presence of active secondary metabolites in the fungal extracts that act against the test pathogens. This has therefore confirmed that fungal endophytes and their extractives have desirable antibacterial activities hence can be used in the formulation of agrochemicals or used as bio-control agents in crop protection especially in common beans (*Phaseolus vulgaris* L).

Key words: Endophytes, *Diaporthe* sp, bean bacterial pathogens.

INTRODUCTION

Syzygium cordatum Hochst.ex Krauss (Myrtaceae) plant is an evergreen water-loving tree, which grows to a maximum of 20 m (Maroyi, 2018). It is native to high altitudes, swampy and riverine sites (Orwa et al., 2009).

Traditionally, the ripe fruits were used in brewing fermented drinks whereas, pounded stem bark was used as fish poison (Maroyi, 2018). In central Africa the plant is used as a remedy for stomach ache and as an anti-

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