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Effect of Biostimulants on Downstream Processing of Endophytic Fungi Hosted in Aromatic Plant, Ocimum basicilium

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Abstract : Endophytic microbes are hosted inside plants in a symbiotic and hugely benefitting relationship. Exploring agriculturally beneficial endophytes is quite a prospective field of research. In the present work fungal endophytes associated with aromatic plant Ocimum basicilium L. were investigated for biocontrol potential. The anti-plant pathogenic activity of fungal endophytes was tested against causal agent of stem rot Sclerotinia sclerotiorum. 75 endophytic fungi were recovered through culture-dependent approach. Fungal identification was performed both microscopically and by rDNA ITS sequencing. Curvuaria lunata (Sb-6) and Colletotrichum lindemuthianum (Sb-8) inhibited 86% and 72% mycelia growth of S. sclerotinia on Sabouraud dextrose agar medium at 7.4 pH. Small-scale fermentation was carried out on sterilised oatmeal grain medium. In another set of experiment, fungi were grown in oatmeal grain medium amended with certain biostimulants such as aqueous seaweed extract (10% v/w); methanolic seaweed extract (5% v/w); cow urine (20% v/w); biochar (10% w/w) in triplicate along with control of each to ascertain the degree of metabolic difference and anti-plant pathogenic activity induced. Phytochemically extracts of both the fungal isolates showed the presence of flavanoids, phenols, tannins, alkaloids and terpenoids. Ethylacetate extract of C. lunata and C. lindemuthianum suppressed S. sclerotinia conidial germination at IC50 values of 0.514± 0.02 and 0.913± 0.04 mg/ml. Therefore, fungal endophytes of O. basicilium are highly promising bio-resource agent, which can be developed further for sustainable agriculture.

Keywords : endophytic fungi, ocimum basicilium, sclerotinia sclerotiorum, biostimulants
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