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FUNGAL ENDOPHYTES : POTENTIAL SOURCE OF INDOLE ACETIC ACID.

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Abstract: In the present study endophytic fungal strains isolated from *Cynodon dactylon*were examined for their potential to secrete phytohormone such as indole acetic acid [IAA]. Out of 15 isolates 10 isolates exihibited synthesis of IAA.The ability of endophytic fungal isolates in producing hormones IAA varied from 30µg/ml to 260µg/ml. one of the strain periconia species produced higher amount ofIAA which was 260µg/ml whereas *cladosporium*species produced lower amount which was 30 µg/ml.

Keyword: Endophytic fungi, *Cynodon dactylon*, Indole acetic acid.

INTRODUCTION:

Endophytes are those microbes that colonize within the living internal tissues of plant without causing any damage to host. Endophytic fungi living within host showing mutualism type of relationship. Endophytes enhance plant growth,improve nutrients uptake, reduce disease severity and enhance host tolerance to environmental stresses.[11,12].Besides being highly diverse in nature, these endophytes are a novel source of bioactive secondary metabolites.[1,13]

Cynodon dactylon is a warm season, prostrate, perennial grass with underground rhizome and on the ground runners [4,5] It has been studied in detail for its chemical constituents and importance in traditional medicine.[14]. Various functional compounds can be produced by endophytic fungi and can act as anti- cancer, antiviral, antibacterial, antifungal, plant growth hormones, insecticides and others.[15,8] The main objective of this research to study the production of IAA hormone, there is no report on synthesis of IAA by endophytic fungifrom *cynodon dactylon* so far to the best of our knowledge.

MATERIALS AND METHODS

Isolation of Endophytes:

The samples were collected from five different places. Cultured on PDA plates and identified according to morphological characteristics. The endophytic fungal isolates were transferred separately to slants. Finally the endophytic fungal isolated were maintained at 4°C.

Analysis of plant growth promoting activity [IAA]:

The quantitative estimation of IAA in Czapeck-dox broth was analysed by the method suggested by Brick et al. (1991). Fungal mycelia were inoculated in 100 ml Czapek-dox medium amended with 1000 µg/ml L-tryptophan and incubated at 28°C in a shaker with 150 rpm/min for 10 days. After 10 days the culture were filtered with syringe filtrate of 0.02µm. For measuring the amount of IAA produced, 1 ml of filtrate mixed with 2ml of Fecl3-perchloric acid [50 ml 35% perchloric acid + 1ml 0.5 M Fecl3 solution] was added and incubated for 20 minutes in dark. The development of pink colour indicated IAA production. The reading was taken at 530nm using UV spectrophotometer.For the quantitative evaluation, a calibration curve was initially created using a stock solution of IAA[10 mg ml^{-1}] that was diluted water to obtain increasing concentrations[0, 10, 20, 50, 100, 200, 400, 600, 800, µL ml^{-1}]

RESULT AND CONCLUSION :

The result of this study demonstrated the highest production of IAA by the *Periconia* species [260µg/ml] followed by CRP2 [200µg/ml] and 5CRU [200µg/ml]. The lowest production shown by *Cladosporium* species[30µg/ml] whereas *Trichoderma sp., Colletotricum sp., Penicillium sp*. showed same amount of IAA production [70µh/ml]. Production of IAA has been observed in several endophytic fungi during the recent years, but very few endophytes associated with medicinal plants have shown to produce IAA[17] Tosapon *et al*[2018] isolated 27 endophytic fungi from *Coffea avabica*, but only one isolate *Collectotrichum fructicola* produced IAA.In our present study A*spergillus niger, Fusarium solani* [Crd3], Crvn have not shown IAA production.In another study by Nath *et al*(2015) on tea plant the endophytic fungi *Aspergillus niger*, *Penicilliumsclerotiorum* showed IAA activity. According to Wagas *et al* [2012] *P. glomerata*&*Penicillium sp*. contained IAA isolated from cucumber plant. Most of the genus *Trichoderma* produce IAA with or without precursor or L-

tryptophan [9]. According to Syamsia *et al* (2015)theability of endophytic fungal isolates in producing hormones IAA varied from 0.635 to 2.651 mg^{-1} in local aromatic rice.Jatropha oil seedcake can be used as a raw material for production of IAA by white rot fungi, *Pleurotus ostreatus* was found to synthesize maximum IAA this study was done by Anjali *etal* (2012).

Periconia species can be further optimized. It can be used by industry for production of IAA.

Table 1. Concentration of IAA from Endophytic Isolates.

Isolates	IAA Concentration[mgl^{-1}]
Trichoderma sp	70
Curvularia sp	40
Draschleria sp	40
Cephalosporium sp	40
Aspergillus flavous	00
Collectotrichom sp	70
Penicillum sp	70
Cladosprium sp	30
Aspergillus niger	---
Periconia sp	260
Crp2	200
5CRU	200
Fusarium solani[Crdi]	---
Crd3	---
Crvn	---

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