

Research Paper :

## Biodiversity of endophytic fungi isolated from selected graminaceous hosts of Mercara region in Karnataka

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### SUMMARY

Endophytes generally advocate a good tool for protection of host by various pathways. In the present study, six important plants belonging to Graminae of Mercara was investigated for endophytic micro flora as a possible source of bioactive secondary metabolites. 720 leaf segments from six plants collected from different locations during 2008-2009, were processed for the presence of endophytic fungi. A total of 46 fungal species were observed. Among the endophytic flora, *Aspergillus* and *Fusarium* were more predominant. Highest endophytic fungal colonization was observed in *Saccharum officinarum* and very least endophytes were isolated from *Cymbopogon citratus*. The importance of endophytes on Graminae members and the interaction between plant and fungus have been discussed in the present communication.

### Key words :

Endophytes,  
Graminae,  
Interaction,  
Secondary  
metabolites

Endophytes are the endosymbionts, often may be a fungus and rarely a bacterium that lives within a plant for at least part of its life without causing apparent disease. They usually occur in above ground plant tissues, but also occasionally in roots. They are distinguished from mycorrhiza by lacking external hyphae or mantel (Kumerasen and Suryanarayan, 2002). Endophytes may be the 'treasure trove' for new pharmaceutical agents and agrochemical compounds. There is a strong need for new drug especially antibiotic, anticancer agent, immunomodulatory compounds and low toxic drought resistant agrochemicals (Huang *et al.*, 2008) it is not surprising therefore, that the bulk of the world's food supply comes from this family. They also include plants that are used for medicinal purposes.

Graminae (Poaceae), is one of the largest families in monocots which include grasses along with rice, wheat, jowar, maize, sugarcane, corn, bamboo etc (Redlin and Carris, 1996). In the present investigations, studies were focused on inventerlization of endophytic diversity on some important members of Graminae.

### MATERIALS AND METHODS

#### Collection of sample:

Leaves and stem samples were collected from fifteen apparently healthy Graminae plants

from several sites in Mercara in Karnataka. Samples were collected and brought to the laboratory in sterile bags and processed within a few hours after sampling, to reduce the chances of contamination.

#### Experimental site:

Mercara is located at 12.42° N and 75.73° E. It has an elevation of 1525meters (5003ft) above sea level. Mercara lies in the Western Ghats region of Karnataka. The temperature ranges from 8.6°C in January to 35°C in May. The humidity ranges from 20%-97%, it has an average rainfall of 2840.2mm and wind speed ranges from 1m-60m/sec.

#### Isolation of endophytic fungi from plants:

Isolation of endophytic fungi was carried out following the method described by (Petrini, 1986). The samples were rinsed gently in running water to remove dust and debris. Then leaves were cut into 3-4mm×0.5-1cm pieces with and without mid rib under aseptic condition. Treating the sample with 75% ethanol for 30secs made surface sterilization. Later, the segments were rinsed three times with sterile distilled water. The plant pieces were plotted on sterile blotting paper. The efficiency of surface sterilization procedure was ascertained for every segment of tissue following imprint method of (Schulz *et al.*, 1993). In each Petri

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