

- Short communication

**REPORT OF ASSOCIATION OF MYCOFLORA WITH LEAVES AND STEMS OF *LEEA MACROPHYLLA* ROXB. EX HARNEM FROM BANGLADESH**

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ABSTRACT

Fifteen species of fungi belonging to ten genera were found to be associated with *Leea macrophylla* Roxb. ex Harnem. The species are *Alternaria tenuissima* (Kunze ex Pers.) Wiltshire, *Aspergillus flavus* Link, *Aspergillus fumigatus*, *Aspergillus niger* van Tiegh, *Chaetomium* Kunze, *Colletotrichum musae* (Berk. & Curt.) Arx, *Colletotrichum dematium* (Pres. Ex Fr.) Grove, *Curvularia pallescens* Boedijn, *Fusarium moniliforme* Shelden, *Fusarium* sp., *Melasmia* Lev, *Penicillium* sp., *Rhizopus* sp., *Trichoderma harzianum* Pers. and *Trichoderma viride* Pers. This is the first record of association of the fungi with *Leea macrophylla* from Bangladesh. All the identified fungi were tested for their pathogenic potentiality. *Colletotrichum dematium*, *Curvularia pallescens*, and *Fusarium* sp. produced symptoms on artificially inoculated leaves of *Leea macrophylla*.

Key words: Mycoflora, Leaves, Stems, Artificial inoculation, *Leea macrophylla*

*Leea macrophylla* Roxb. ex Harnem belongs to Leeaceae. It's local name is Dholsamudra. It is a herbaceous perennial plant and distributed in India, Myanmar, Thailand and Laos. In Bangladesh, the plant is available in Chittagong district, the Chittagong Hill Tracts and northern parts of the country (Ahmed *et al.* 2009). This plant has anti-cancerous properties. Also has medicinal value of curing severe headache or migraine (Choudhury *et al.* 2008). Powder of leaves mixed with honey is given to patient of cancer. Decoction of tuber is given to animal with drenching tube in dysentery. Bark powder is given orally to cure cancer. Powder of tuber is given to cure sexual disability in male. The root is a good alexipharmic (Zobaer *et al.* 2011). A lot of research has been done on the ethnobotanical importance of *Leea* but research about its fungal disease is inadequate (Dhale 2011, Tuhin *et al.* 2012). The plant is grown in the Botanic garden, Dhaka University. It is a rare plant and has considerable medicinal and ethnobotanical value. Thus, it is important to find out the etiology, and identification of the associated fungi with the plant. Present study was undertaken (i) to find out association of fungi with the plant, (ii) isolation, characterization and identification of the associated fungi, and (iii) to determine the pathogenic potentiality of the associated fungi.

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<sup>1</sup> A part of MS thesis of first author (RH), Department of Botany, University of Dhaka, Dhaka, Bangladesh.

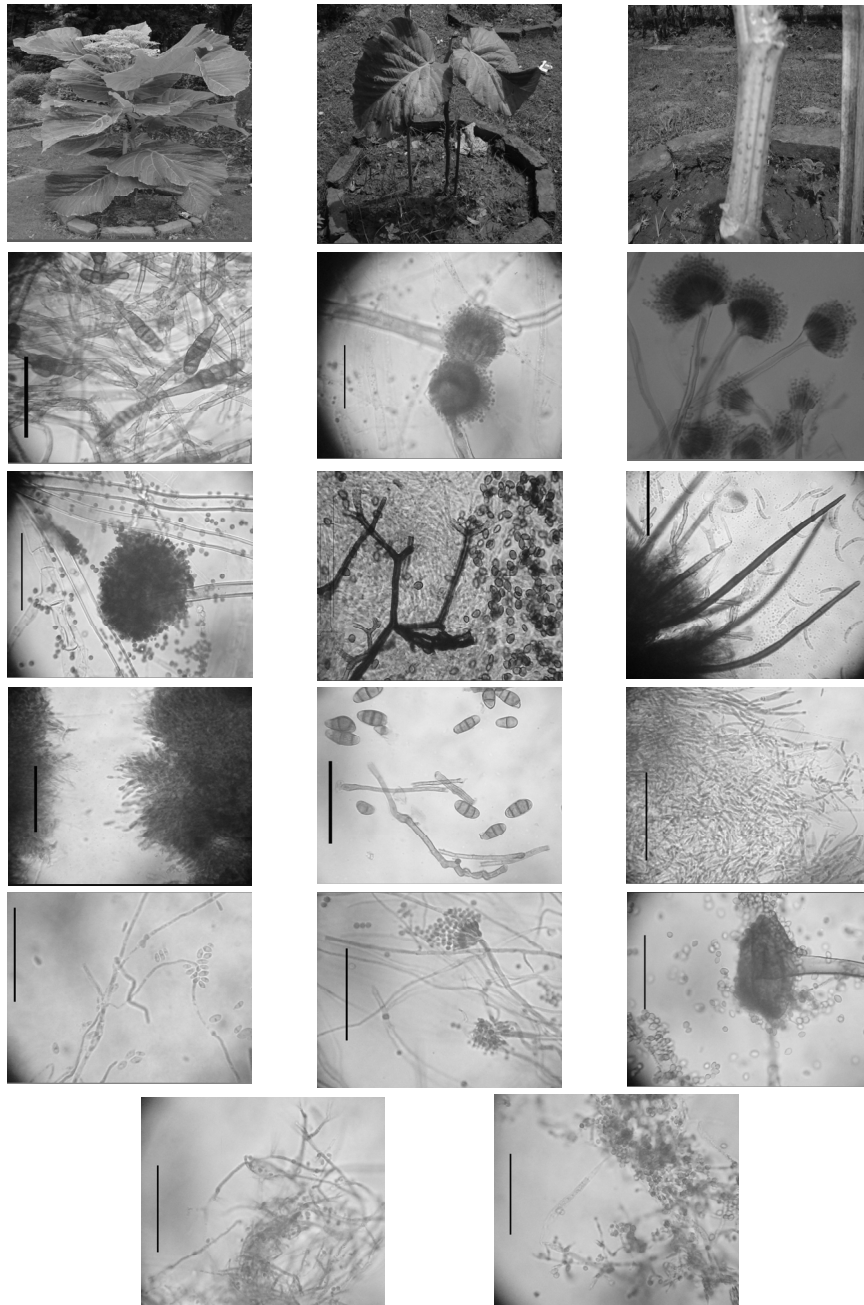


Fig. 1. Photographs showing *Leea macrophylla*: A. Healthy plant; B. Infected plant and C. Infected stem. Mycophotographs of D. *Alternaria tenuissima*; E. *Aspergillus flavus*; F. *Aspergillus fumigatus*; G. *Aspergillus niger*; H. *Chaetomium* sp. I. *Colletotrichum dematium*; J. *Colletotrichum musae*; K. *Curvularia pallescens*; L. *Fusarium* sp. M. *Fusarium moniliforme*; N. *Penicillium* sp. O. *Rhizopus* sp.; P. *Trichoderma harzianum*, and Q. *Trichoderma viride*. (Bar = 50  $\mu$ m).

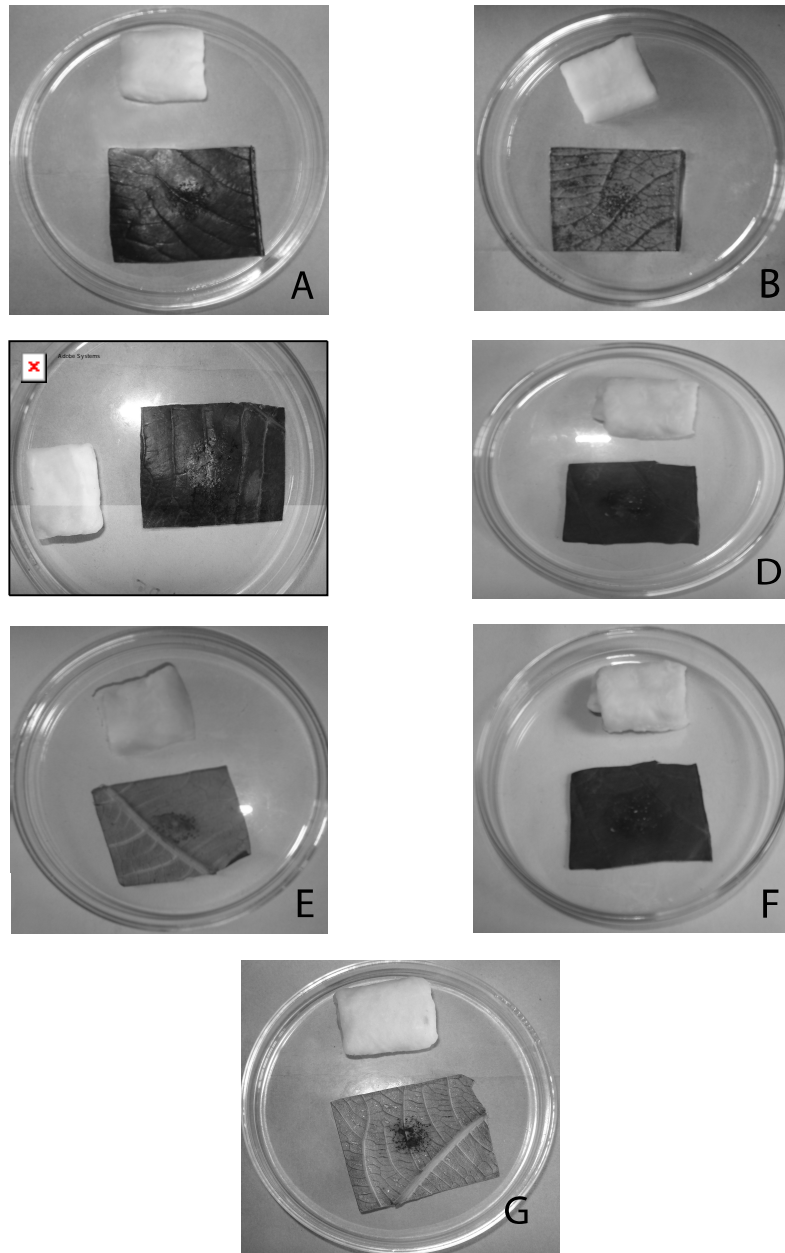


Fig. 2. Photographs showing: A. Uninoculated dorsally pricked leaf piece of *Leea macrophylla* (control), B. Uninoculated ventrally pricked leaf piece (control), C. Symptom produced by *Colletotrichum dematium* on pricked dorsally inoculated leaf piece; D. Symptom produced by *Curvularia pallescens* on pricked dorsally inoculated leaf piece, E. Symptom produced by *Curvularia pallescens* on pricked ventrally inoculated leaf piece, F. Symptom produced by *Fusarium* sp. on pricked dorsally inoculated leaf piece and G. Symptom produced by *Fusarium* sp. on pricked ventrally inoculated leaf piece.

The present study is based on healthy and affected leaves and stem of *Leea macrophylla* plant. Leaves and stem samples were collected from the plant reared in Botanic garden, Curzon Hall Campus, University of Dhaka. The experiment was carried out in the Laboratory of Mycology and Plant Pathology, Department of Botany, University of Dhaka.

The fungi were isolated from samples following the "tissue planting" method on PDA medium. The fungi that were raised from the inocula were examined and identified. Identification was done following standard literature (Ahmed *et al.* 2009, Booth 1971, Ellis 1971, 1976, Sutton 1980, Barnett and Hunter 1972).

The pathogenic potentiality of the isolated fungi was tested following modified 'detached leaf technique'.

**Table 1. Frequency percentage of fungi associated with healthy and diseased leaf and stem of *Leea macrophylla*.**

Name of fungi isolated	Leaves (% of fungi)		Stem (% of fungi)	
	Healthy	Diseased	Healthy	Diseased
<i>Alternaria tenuissima</i>	1.5	0.95	-	-
<i>Aspergillus flavus</i>	5.7	1.03	-	-
<i>Aspergillus fumigatus</i>	-	0.95	-	3.70
<i>Aspergillus niger</i>	1.90	6.58	-	-
<i>Chaetomium</i> sp.	0.95	-	-	-
<i>Colletotrichum dematium</i>	-	0.95	-	-
<i>Colletotrichum musae</i>	5.55	17.30	-	-
<i>Curvularia pallescens</i>	0.95	0.95	-	2.78
<i>Fusarium moniliforme</i>	4.60	10.46	-	6.67
<i>Fusarium</i> sp.	21.90	13.33	-	12.60
<i>Melasmia</i> sp.	3.17	12.8	-	-
<i>Penicillium</i> sp.	-	-	3.70	-
<i>Rhizopus</i> sp.	-	-	5.56	-
<i>Trichoderma harzianum</i>	-	-	2.71	-
<i>Trichoderma viride</i>	-	1.73	-	-

Fifteen species of fungi belonging to ten genera were found to be associated with healthy and infected leaves and stems of *Leea macrophylla* Roxb. ex Harnem (Fig. 1. A - C). The isolated fungi are *Alternaria tenuissima*, *Aspergillus flavus*, *A. fumigatus*, *A. niger*, *Chaetomium* sp., *Colletotrichum dematium*, *C. musae*, *Curvularia pallescens*, *Fusarium* sp., *F. moniliforme*, *Melasmia*, *Penicillium* sp., *Rhizopus* sp., *Trichoderma harzianum* and *T. viride*. This is the first record of association of all the fungi with *Leea macrophylla* from Bangladesh.



Nine species of fungus were isolated from healthy leaves of *Leea macrophylla*. Frequency percentage of association of *Fusarium* sp. was higher (21.90) and lower in *Chaetomium* sp. (0.95) (Fig. 1. D - Q, Table.1).

Eleven species were isolated from infected leaves of *Leea macrophylla* with wilting and anthracnose symptoms. Frequency percentage of association of *Colletotrichum musae* was higher (17.3), and lower (0.95) in *Alternaria tenuissima*, *A. fumigatus*, *Colletotrichum dematium* and *Curvularia pallescens* (Table 1).

In healthy stem of *Leea macrophylla* three species were isolated. Frequency percentage of association of *Rhizopus* sp. was higher (5.56) and lower (2.7) in *Trichoderma harzianum* (Table 1). Four species were isolated from infected leaves of *Leea macrophylla*.

Frequency percentage of association of *Fusarium* sp. was higher (12.60) and lower (2.78) in *Carvularia pallescens* (Table 1).

All the isolated fungi isolated from infected samples were tested for pathogenicity. Present investigation showed that uninoculated control leaf pieces did not show any symptom. *Colletotrichum dematium* produced symptoms on dorsally pricked leaf pieces, *Curvularia pallescens* and *Fusarium* sp. produced symptoms on both dorsally and ventrally pricked inoculated leaf pieces of *Leea macrophylla* (Fig. 2, A - G). Inoculated fungi that produced symptoms on leaf pieces were successfully reisolated on PDA plates. It is expected that the present investigation will help to devise management of diseases of *Leea* plant.

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*(Received revised manuscript on 01 October, 2012)*