

– Short communication

MYCOFLORA ASSOCIATED WITH THE LEAVES OF *SENNA ALATA* (L.) ROXB.

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ABSTRACT

Fungi associated with leaves of *Senna alata* (L.) Roxb. (*Cassia alata* L.) and their pathogenic potentiality have been discussed. A total of 8 species of fungi belonging to 8 genera of Deuteromycetes were found to be associated with *S. alata*. The fungi were *Acromoniella* sp., *Arthrinium saccharicola* Stevenson, *Aspergillus niger* Van Tiegh, *Cladosporium cladosporioides* (Fresen.) de Vries, *Colletotrichum gloeosporioides* (Penz.) Sacc., *Curvularia lunata* (Wakker) Boedijn, *Nigrospora sphaerica* (Sacc.) Mason, *Pestalotiopsis guepinii* (Desm.) Stay and unidentified Hyphomycetes, *C. gloeosporioides* and *P. guepinii* were found to be pathogenic to *S. alata*.

Key words: Mycoflora, Associated leaves, *Senna alata*

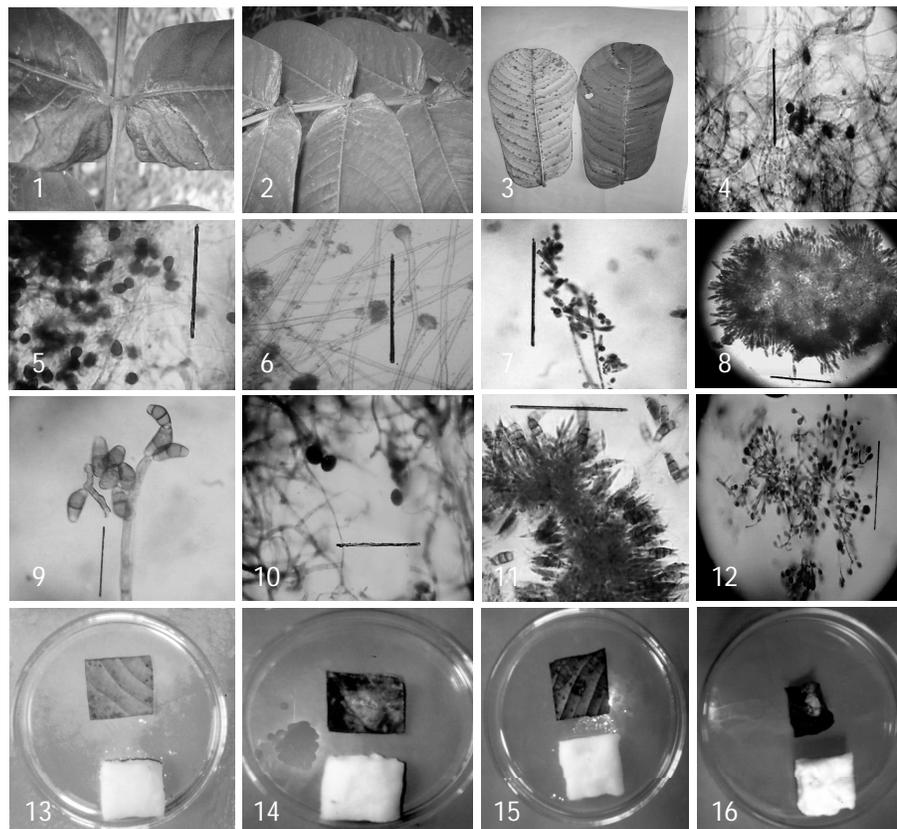
Senna Alata (L.) RoxB. belongs to the family Ceasalpinaceae. It is an erect herb, 6 to 12 feet tall with compound leaves. Terminal inflorescence is a spike with beautiful cluster of golden yellow flower resembles yellow candlesticks - earning its common name candlestick or candle bush. The plant is native to the Amazon Rainforest. Due to its beauty, it has been cultivated around the world as an ornamental plant and has been naturalized in many tropical regions in the world. *Cassia alata* is one of the best medicinal plant against bacteria, fungus, virus and parasite. Also used as remedy of arthritis, insect bite, ring worm and eczema. The plant contains a group of chemicals anthraquinones and saponin. These chemicals are well known for their laxative effect. Saponin expels intestinal parasites. The leaves or sap contain a fungicide, chrysophanic acid. Because of its antifungal properties, it is a common ingredient in soaps, shampoos and lotions in the Phillipines. The extract of the plant showed antifungal properties against *Sclerotium rolfsii* causing Cocoyam cormel rot in storage (Eunice and Osuji 2008). Agbagua *et al.* (2003) reported crude extracts of *C. alata* decrease the rate of germination, and inhibited radical elongation in *Celosia argentea* L.

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Many works have been done on alkaloids of *C. alata* and association of fungi with this plant in other countries. *Phomopsis cassia* Da Camara has been implicated as the cause of wilt and dieback of *C. alata* in Tanzania and Venezuela. Foliar leaf spot caused by *Cercospora canescense* Ell. & Mart was reported from Cuba. *Phaeoisariopsis simulata* was reported on the plant from Colombia, USA and Venezuela (Jillian 1990). Present study was undertaken (i) to isolate the fungi associated with the healthy and diseased leaves of the plant and (ii) to test the pathogenic potentiality of the associated fungi.



Figs. Anthracnose (1-2) and scattered, 3. Leaf spot of *Cassia alata*, 4. *Acremoniella* sp., 5. *Arthrinium saccharicola*, 6. *Aspergillus niger*, 7. *Cladosporium cladosporioides*, 8. *Colletotrichum gloeosporioides*, 9. *Curvularia lunata*, 10. *Negrospora sphaerica*, 11. *Pestalotiopsis guepinii*, 12. Unidentified Hypomyces, 13. Control, 14. Symptom produced by *Colletotrichum gloeosporioides*, 15. Control, 16. Symptom produced by *Pestalotiopsis guepinii*. (Bar = 50 μ m).

Healthy and infected leaf samples were collected from Savar, Gazipur and the Botanic Garden, University of Dhaka during the period of January, 2009 to December, 2010. Twenty five samples were examined from healthy and infected leaves of *S. alata*. The fungi were isolated on PDA (Potato Dextrose Agar) medium following "Tissue

planting” method. The pathogenicity of the isolated fungi was tested following modified ‘detached leaf technique (Azad and Shamsi 2011).

Identification of the isolates was determined following the standard literatures. (Ellis 1971, 1976, Sutton 1980). All the specimens were preserved in the Herbarium, Mycology and Plant Pathology division, Department of Botany, University of Dhaka, Bangladesh.

In Bangladesh research has been done on antifungal activities of *S. alata* but this is the first report of association of the fungi with *S. alata* (Rahman 2010). In the present investigation two types of symptoms were recorded on the plant i.e. anthracnose (Figs. 1-2) and indistinct small scattered leaf spots (Figs. 3). Healthy and infected leaves of *S. alata* were examined. Healthy leaves were completely free from fungal association.

Table 1. Frequency percentage of association of fungi with *Senna alata*.

Fungal species	Healthy leaves	Symptom type	
		Anthracnose	Scattered spot
<i>Acromoniella</i> sp.	-	-	1.70
<i>Arthrinium sphaerica</i>	-	-	3.75
<i>Aspergillus niger</i>	-	10.00	20.00
<i>Cladosporium cladosporioides</i>	-	26.50	23.25
<i>Colletotrichum gloeosporioides</i>	-	53.00	24.75
<i>Curvularia lunata</i>	-	-	30.00
<i>Pestalotia guepinii</i>	-	-	35.00
<i>Nigrospora sphaerica</i>	-	16.50	-
Unidentified Hyphomycetes	-	2.00	-

- = no isolate

A total of eight species of fungi belonging to eight genera of Deuteromycetes and one unidentified Hyphomycetes were found to be associated with *S. alata*. The fungi were *Acromoniella* sp., *Arthrinium saccharicola* Stevenson, *Aspergillus niger* van Tieghem, *Cladosporium cladosporioides* (Fresen.) de Vries, *Colletotrichum gloeosporioides* (Penz.) Sacc., *Curvularia lunata* (Wakker) Boedijn, *Nigrospora sphaerica* (Sacc.) Mason, *Pestalotiopsis guepinii* (Desm.) Stay and an unidentified Hyphomycetes. *C. gloeosporioides* and *P. guepinii* were found to be pathogenic to *S. alata* (Figs. 4-16).

Four fungal species were isolated from the leaves of *S. alata* showing anthracnose symptom. The isolated fungi were *Aspergillus niger*, *Cladosporium cladosporioides*, *C. gloeosporioides*, *N. sphaerica* and an unidentified Hyphomycetes. Frequency of association of *C. gloeosporioides* was highest (53 %) and *A. niger* was lowest (10%) (Table 1).

Five *Colletotrichum* species were recorded on *Cassia* spp. *Colletotrichum capsici* (Syd.) Butler & Bisby has been recorded on *C. occidentalis* in Malaysia and *C. tora* in India. *C. fragariae* causes anthracnose of *C. obtusifolia* in Florida, *C. gloeosporioides*

(Penz.) Sacc. has been recorded on *C. absus* in Zambia and *C. alata* in Tanzania and Venezuela. *C. lindemuthianum* (Sacc. & Magn) Br. & Cav has been found on *C. fistula*, *C. occidentalis* and *C. tora* in India; while *C. truncatum* (Schw.) Andrus & Moore has been recorded on *C. occidentalis* in India and USA and *C. rotandifolia* in Colombia. *C. truncatum* has been considered as a biological control agent of the weed of coffee senna *C. occidentalis* in USA

The present report is the first one of the association of the fungi with *S. alata* in Bangladesh. At the same time except *C. gloeosporioides* this is the first record of association of these fungi with *S. alata*.

In case of infected leaves of *S. alata* with indistinct scattered spots, seven fungal species were isolated. The isolated fungi were *A. atra*, *Arthrinium saccharicola*, *A. niger*, *Cladosporium cladosporioides*, *C. gloeosporioides*, *C. lunata*, and *P. guepinii*. Frequency of association of *P. guepinii* was highest (35%) and *Acromoniella* sp. was lowest (1.75%), (Table 1).

All the fungi isolated from *S. alata* were tested for their pathogenic potentiality following “Detached leaf assay” technique. Among the fungi *C. gloeosporioides* and *P. guepinii* produced symptoms on dorsally and ventrally pricked inoculated leaf pieces. Unpricked and pricked uninoculated control leaf pieces did not produce symptom.

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