Journal on New Biological Reports **2**(1): 64-66 (2013) **ISSN 2319 – 1104 (Online)**

Hyperparasitism of *Isthmospora spinosa* Stevens and *Spiropes melanoplaca* (Berk. & Curtis) Ellis on *Meliola tylophorae – indicae* Hosag. parasitizing *Tylophora indica* (Burm. f.) Merill from India- A New Record

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(Received on: 14 March, 2013; accepted on: 23 April, 2013)

ABSTRACT

A new report of the *Isthmospora spinosa* Stevens, 1918 and *Spiropes melanoplaca* (Berk. & Curt.) Ellis, 1968 on *Meliola tylophorae- indicae* Hosag. & Manoj, 2004 on *Tylophora indica* (Burm.f.) Merrill.have been described here to propose as a new mycoparasitic record.

Key Words: Hyperparasitism, *Isthmospora spinosa*, *Meliola tylophorae – indicae, Spiropes melanoplaca, Tylophora indica.*

INTRODUCTION

Tylophora indica (Burm.f.) Merrill. Belongs to the family Asclepiadaceae is medicinally important plant as it is used in the treatment of Bronchial Asthma and commonly known as 'Atamul'. It is used as stimulant, expectorant and remedy for asthma. Important alkaloids present in the plants are tylophorinine, tylophorine and tylophorinidine. It is reported to yield fine and strong fibre (Annonymous). During the survey conducted in January, 2012 to Sawantwadi forest areas of Sindhudurg district, Maharashtra to conduct studies on "Foliicolous Fungi of Maharashtra,various plants heavily infested with sooty moulds disease were observed. Out of this leaves of *Tylophora indica* heavily infested with black mildew disease (fig.1D) were brought to the laboratory.

METHODOLOGY

The fungi associated with leaves were mounted on a glass slide by colloidion technique (Hughes 1976). When a drop of colloidion solution was applied to a colony of such organisms on a leaf, the fungus got entirely embedded and the dried film could be peeled off readily from the host surface. Removal of the colloidon by acetone on a glass slide resulted in undisturbed preparations.The morphological characteristics of the isolates were studied in detail to identify the fungi associated with the disease. On examination of groups of sooty mould fungi, one of the fungi was identified as *Meliola tylophorae- indiace* Hosag. & Manoj 2004. Besides this after a critical study conducted two more fungi i.e. *Isthmospora spinosa* Stevens, 1919 and *Spiropes melanoplaca* (Berk. & M.A. Curtis), Ellis, M.B., 1968were identified as a hyperparasitic fungus on *Meliola tylophorae-indicae.*

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RESULTS AND DISCUSSION

Description of species

1. *Meliola tylophorae –indicae* Hosag, 2004. *Indian Phytopath*. 57(4): 466. (Fig.1.A)

Colonies epiphyllous, dense, closely distributed, up to 1 mm in diameter, rarely confluent. Hyphae straight to sub straight, branching mostly opposite at acute angles, loosely reticulate, cells 20-26 x 6-7 µm. Appressoria alternate, rarely up to 1 cells 20-26 x 6 opposite, antrorse, 14-16 µm long; stalk cells cylindrical to cuneate, 3-5 µm long; head cells mostly ovate, rarely globose, entire, 11-13 x 9-11 µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 14-17 x 6-7 µm. Mycelial setae sparse, scattered to grouped around perithecia, simple, straight, obtuse at the tip, up to 245 µm long. Perithecia scattered, globose, up to 120 µm in diameter; ascospores oblong, 4-septate, 30-34 x 9-11 µm.

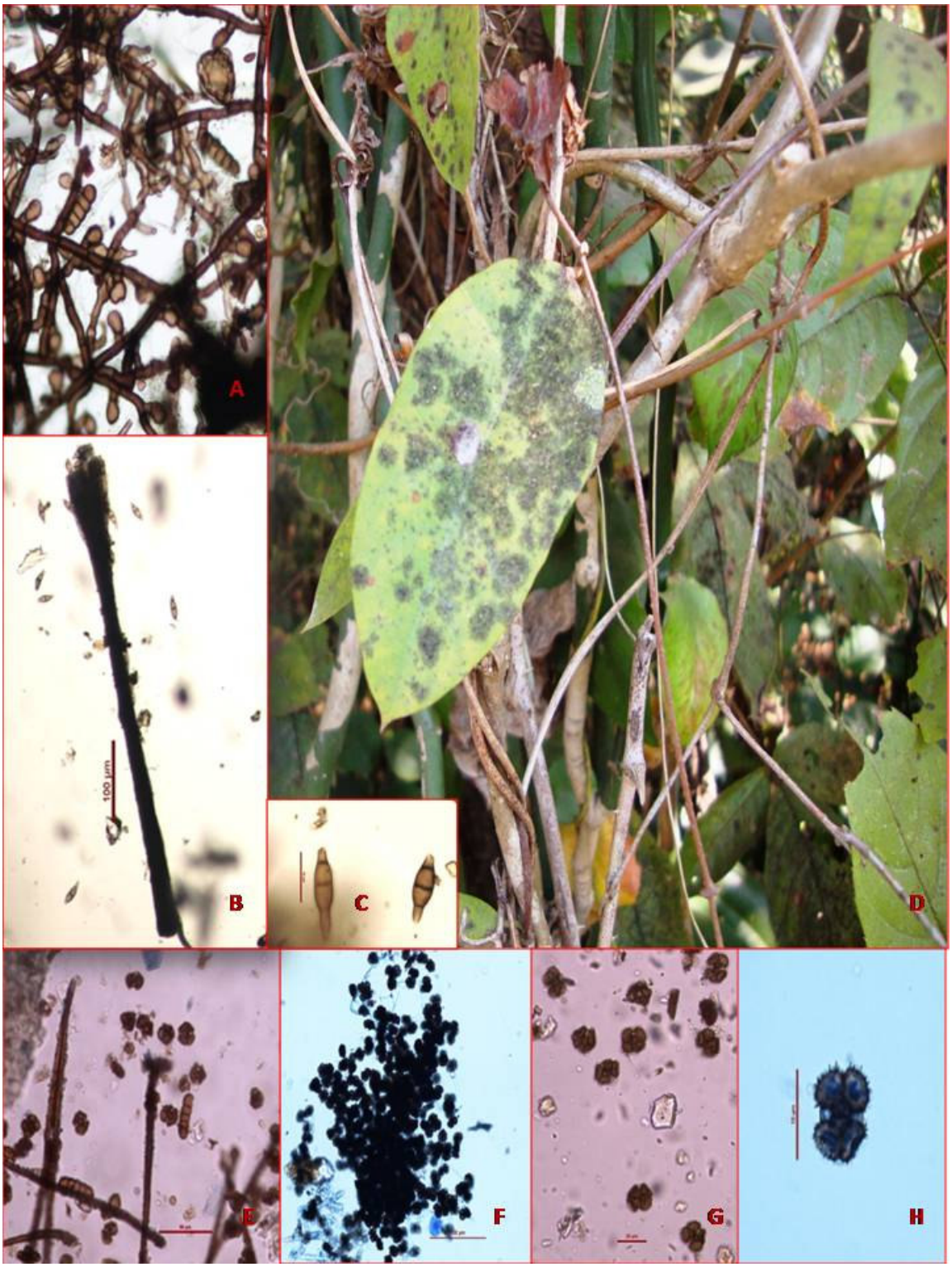

Fig.1 Black Mildews of *Tylophora indica* (Burm.f.) Merrill. *(*A) *Meliola tylophorae- indicae*; (B & C). Synemata of *Spiropes melanoplaca*; D. *Tylophora indica*; E. *Isthmospora spinosa* Stevens on *Meliola tylophorae- indicae;* (F – H) Conidiophores and conidia of *Isthmospora spinosa.*

2. *Spiropes melanoplaca* (Berk. & M.A. Curtis), Ellis, M.B., 1968. Mycological Papers, 114:28 -30. (Fig. 1 B & C)

Colonies effuse, dark blackish brown to black, hairy, with large, erect, dark synemata. Conidiophores threads very tightly packed together to form erect, dark blackish brown to black synemataupto800 µm long, 40-80 µm µm thick while splaying out at apex. individually brown or dark brown, smooth, cylindrical and 4-5.0 µm thick along most of their length, paler and thickening to 5–8 µm near the apex, with numerous scars which frequently lie at an angle to the wall and overlap like the scales. Conidia straight or slightly curved, fusiform to obclavate, often rostrate, 3 septate, the two middle cells golden brown or brown, smooth, the cells at each end very pale and usually smooth, 28- 43 µm long, 7-12 µm (10.2) thick in the broadest part, tapering to 3-4 at the apex, 4-5 wide at the truncate base.

3. *Isthmospora spinosa* Stevens, 1919 *Botanical Gazette* Crawfordsville, 65(3):244. (Fig. 1 E - H)

The isolates was characterised by numerous black colonies hyperparasitic on Meliola and similar fungi. Mycelium superficial, fine, 1-2um, pale brown, aggregated into dense knots enveloping parts of host mycelium. Conidiophores short, but slightly differentiated from the mycelium branched and frequently anastomosing, pale to dark brown, smooth. The spores viewed from the above are seen to consist of 4 major cells which are dark coloured and rather thickly set with spines, each spine about 1 u long. The major cells are arranged in two pairs which are connected by a 2 – celled isthmus. This isthmus is flanked on either side by circular, hyaline cells. Dimensions: total length 17-25 µm, breadth 14-20 µm , isthmus 3-4 µm wide, hyaline cell 3-4 µm in diameter.

Material Examined

On leaves of *Tylophora indica* Burm. f. (Asclepiadaceae) from Sawantwadi forest region, Sindhudurg Dist, (M.H.) dated 21.1.2012, collected by R. Dubey. The specimen has been deposited in Botanical Survey of India, Western Regional Centre, Pune with Collection No. B.S.I. (W.C.) 200150, Accession No. BSI-132468 (Holotype).

Isthmospora spinosa and *Spiropes melanoplaca* are fungi mostly reported in tropical habitats and occur in association with meliolicolous fungi. Although there are many records of fungi on *T. indica* (Bilgrami et al 1991 and Jamaluddin et al 2004), but this appears to be the first report of occurrence of Hyperparasitism of *Isthmospora spinosa* and *Spiropes melanoplaca* on *Meliola tylophorae - indicae* on *Tylophora indica* from India.

ACKNOWLEDGEMENTS

Authors are thankful to the Director, Botanical survey of India for providing Laboratory facilities. They are also grateful to the Head of the office, Botanical Survey of India, Western Regional Centre, Pune for her kind support and encouragement. Ministry of Environment and Forest, New Delhi is also thankfully acknowledged.

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