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DIVERSITY OF XYLARIA HILL EX SCHRANK FROM THE JALGAON DISTRICT, MAHARASHTRA, INDIA

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ABSTRACT

The present study deals with new distribution record of seven *Xylaria* Hill ex Schrank species from different forest area of Jalgaon District. The authors collected many interesting species. *Xylaria* Hill ex Schrank is large and first described genus of family Xylariaceae. The *Xylaria* Hill ex Schrank is characterized by sac like perithecia, ascocarp and long chains of asci with variable numbers of ascospores. The specimen of xylaria collected from different parts of Jalgaon district of Maharashtra, India. The collected specimen were screened by standard methods. Each specimen was examined on the basis of morphological and microscopical characters. The measurement or dimensions of stromata, perithecia, asci and ascospores were taken. All the species *Xylaria aristata* Mont., *Xylaria brevipes* Sacc., *Xylaria feejeensis* (Berk.) Fr., *Xylaria hypoxylon* (L.) Grev., *Xylaria microceras* (Mont.) Fr., *Xylaria pallid* Berk&Cooke and *Xylaria polymorpha* (Pers. ex Fr.) Grev. in the study were examined and identified on the basis of morphology.

Keywords : Diversity, *Xylaria* Hill ex Schrank, ascospores. Jalgaon district.

Introduction

Xylariaceae is a large and relatively well known Ascomycetes family found in most countries, which contain 35 genera. Most of them species are saprobes wood degraders while some are endophytic or even associates with termite nests. Majority the *Xylaria* Hill ex Schrank species are host-specific but many question about the *Xylaria* Hill ex Schrank species remain unanswered, especially with regard to colonization of hosts. Study and identification has been done on the basis of morphological and microscopical characters. Some species are difficult to identify from their colour, size and shape.

The forest of Jalgaon is a Tropical, dry, deciduous types. The vegetation varies with the changes in altitudes aspect and rainfall. There are various subtypes of the forest in the area. In the Manudevi forest there are a number of the parasitic fungi causing various types of the foliage diseases in the forest trees in this area. This geographical area of Jalgaon is 11765 sq.kms and the total forest lies on the Satpuda range in The Jalgaon District. It is about 60 km away from the Jalgaon city. It is in continuation with Pal wild life sanctuary. The forest is tropical dry deciduous and have various trees, shrubs and herbs.

The *Xylaria* Hill ex Schrank species is identified on the basis of morphological characters that include upright sessile or stipitate stromata with fertile parts cylindrical to clavate or globoid or irregular, simple or branched. Perithecia remain embedded in fertile parts or the perithecial elevations

evident. Asci cylindrical or subcylindrical, usually long stipitate, with more or less well-developed apical ring, which is usually stained blue with iodine. Ascospores often eight, light to dark brown, usually one celled with a short to long, conspicuous or inconspicuous germ slit. An a morphs are produced on immature teleomorphic stromata or separate anamorphic coremia. Whalley (1996) classified the species of *Xylaria* on the basis of morphometrical characters by giving priority to the length and position of germination slit of the ascospores.

Material and Methods

Xylaria Hill ex Schrank specimens collected from different parts of the forest of Jalgaon district from Maharashtra, India, different sites like Manudevi forest, Pal forest, Devjiri forest, Yawal forest, and road side fields. The collected specimen were wrapped in the butter paper and packed in brown colored 5" x 3" packet. The location, host name and date of collection has been written on the brown packet. Each specimen is examined on the basis of the morphological characters with host specificity and microscopically characters of perithecia, asci and ascospores. The dimensions of perithecia, asci and ascospores has been taken for 10, 20 and 50 times respectively. Lactophenol cotton blue and distilled water was used to mounting the media for microscopy. Observation and photography were carried out. These collections were studied in respect of Morphology, taxonomy and their specific identify with the help of relevant literature. During exploration of *Xylaria* Hill

ex Schrank species from Jalgaon district we have collected seven species, the description of collected species of *Xylaria* Hill ex Schrank are as follows:

Xylaria aristata Mont. in Ann. Sci. Nat. Bot. Ser. 4, 3, 106 (1855).

Stroma erect, irregular, branched, long, rough surface, stalked, black, 3.5-4 cm long stromata, stroma black, two branches on one stalk, stalk black, medium, rough; perithecia many, ostiolate, broad at base, tapered at the tip, flask shaped, embedded in stroma, vary in shape, 260-585 × 260-520 μm; ascus long, many, dark brown, 91.48-98.4 × 3.28 μm; ascospore, dark brown 6.56-13.12 × 3.28 μm.

Xylaria brevipes Sacc., Jour. Mycol. 12: 47 (1906).

Stromata cylindrical to clavate, small, black, with slightly acute apex, on very short tomentose stipe arising from pannose base, 1-1.7 cm total length × 1-3 mm diameter. Externally black, white inside, texture woody, surface rough, collected on rotted wood. Perithecia globose to subglobose, 0.3-0.4 mm diameter. Asci cylindrical, eight spored, apical tip stained blue with iodine reagent, 140-200 μm total length × 3-4.5 μm, paraphyses filiform, numerous. Ascospores uniseriate, unicellular, brown, ellipsoid, in equilateral, with narrowly rounded ends, 7.5-12 × 3-4.5 μm, germ slit almost full spore length.

Xylaria feejeensis (Berk.) Fr. Nova Acta Regiae Soc. Sci. Upsal. (ser. 3) 1: 128 (1851).

Stroma erect, cylindrical, brown, stalked stromata; stroma brown, rough, stalk, short; perithecia rounded, few in stroma, globous, some are flattened, present at the periphery of the stroma, 247-338 × 195-260 μm; ascus many, long, light brown, 82-85.28 × 3.28-6.56 μm; ascospore light brown, 9.84-16.4 × 3.28-6.56 μm.

Xylaria hypoxylon (L.) Grev. Fl. Edin.: 355.1824.

Stromata at first blackish, velvety to smooth, whip-like to sparsely branched with greyish-white to ash-white conidial deposits, with age becoming black, smooth, flexible, irregularly antler-shaped and fertile with pointed apices and merging below into blackish-brown to greyish-brown, short to long sterile stem (epigeal), and embedded in humus/wood/pods/seeds/kernels by means of small to long rooting base, flesh white, smooth and flexible, ostiole papillate and stromata measures 3-9 cm tall (variable in diam.).

Perithecia black, sub-spherical, fully embedded in antlers, 0.3-0.4 mm diam. and arranged in a single dense layer just below the surface. Asci cylindrical, long, stipitate, 8-spored and measures 95-125 × 5.2-5.8 μm. Ascospores blackish-brown, ellipsoid-in equilateral, aseptate, uniseriate and measures 10.8-14.6 × 5-6 μm.

Xylaria microceras (Mont.) Fr. Nov. Act. Reg. Soc. Sci. Upsal. Ser. 3, 1: 28, 1851.

The species has erect, small, stalked, brown, simple, 0.3-1 cm long stromata; stroma brown, apex acute, rough surface; stalk blackish, hairy, short; the perithecia are rounded, few per stroma, globous, flask shaped, ostiolate, 364-520 × 364-390 μm; ascus many brown, 98.4-114.8 × 3.28-6.56 μm; ascospore brown, 9.84-16.4 × 3.28-6.56 μm, other than the perithecial measurement all features are coincide with *Xylaria microceras*.

Xylaria pallid Berk and Cooke in J. Linn. Soc., Bot. 15: 395 (1877).

Stroma erect, simple, dark black, cylindrical, short with short stalk stromata; stroma rough, short, black, rough surface, apex rounded; perithecia, globous, vary in shape, majorly rounded but some are flattened at the periphery of stroma, 195-364 × 195-338 μm; ascus long, light brown, 49.2-65.6 × 3.28 μm; ascospore small, light brown, 6.56-13.12 × 3.28 μm.

Xylaria polymorpha (Pers. ex Fr.) Grev, Flora Edinensis: 355.1824.

Stromata at first irregularly clavate, greyish-black with smoky-white/ash-grey powdery deposits, on age becoming purple-black and then black with elongated, broad, cylindrical-clavate to irregular, bulged, warty, finely wrinkled, apex round fertile head and narrowing below into a brownish black, short, stout sterile stem firmly attached to the wood (sometimes the fruit bodies are sessile with short to long rooting bases/stipes), flesh white and brittle, ostiole papillate and stromata measures 3.2-8.4 cm tall × 0.8-2.2 cm thick.

Perithecia black (purple-black), sub-spherical, fully embedded in fertile head, 0.5-1 mm diam., and arranged in a single dense layer just below the surface. Asci cylindrical, long, stipitate, 8-spored and measures 165-210 × 8-14 μm. Ascospores purple-brown, aseptate, uniseriate and measures 10.5-14.5 × 3.9-4.7 μm.

Result and Discussion

During exploration of *Xylaria* Hill ex Schrank species from Jalgaon district seven species of *Xylaria* Hill ex Schrank collected from different sides of Jalgaon forest. These species are *Xylaria aristata* Mont., *Xylaria brevipes* Sacc., *Xylaria feejeensis* (Berk.) Fr., *Xylaria hypoxylon* (L.) Grev., *Xylaria microceras* (Mont.) Fr., *Xylaria pallid* Berk & Cooke and *Xylaria polymorpha* (Pers. ex Fr.) Grev. During field survey the *Xylaria hypoxylon* (L.) Grev., and *Xylaria polymorpha* (Pers. ex Fr.) Grev. are dominant in Manudevi forest, Devjiri forest and Pal forest. *Xylaria* Hill ex Schrank were most common in the monsoon.

In the present study *Xylaria aristata* Mont., *Xylaria brevipes* Sacc., *Xylaria feejeensis* (Berk.) Fr., *Xylaria hypoxylon* (L.) Grev., *Xylaria microceras* (Mont.) Fr., *Xylaria pallid* Berk & Cooke and *Xylaria polymorpha* (Pers. ex Fr.) Grev. were reported for the first time from Satpuda range of Jalgaon district, Maharashtra.



Xylaria brevipes Sacc.



Xylaria aristata Mont.,



Xylaria feejeensis (Berk.) Fr.



Xylaria hypoxylon (L.) Grev. *Xylaria polymorpha* (Pers.) Grev.



Plate-I

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