



Passalora flemingiae: A newly discovered taxon found on the leaves of *Flemingia bracteata*

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ABSTRACT

In India, there are 17 species and 1 variety belonging to the genus *Flemingia* Roxb.exW. T. Aiton [1]. It is used as a traditional medicine in various regions of the Indian subcontinent to treat fever, hysteria, and epilepsy. New species of *Passalora* on *Passalora flemingiae* are described collected from tropical deciduous forest of Balaghat, central India on the leaves of *Flemingia bracteata* (fabaceae). The new *Passalora* species differs from comparative species by its Semimacronematous conidiophores and acropleurogenous, conidia as peculiar character.

Keywords: *Passalora*, *Flemingia bracteata*, taxonomy.

INTRODUCTION

In this genus, there are about 70 species that are known to be uncommonly documented. These species primarily belong to a clade that includes species from *Zasmidium* and other genera. Certain species are clearly identifiable as plant diseases and have a limited host range, whereas other species seem to grow only superficially on plants and have been found on a variety of host species [2][3]. The well-known anamorphic genus *Passalora* Fr. is extensively dispersed around the globe. Numerous plants are host of *Passalora* species, which create a variety of leaf spots. the majority of *Passalora* species are *foliicolous* in nature and may be identified by the production of dematiaceous conidiophores and phragmosporous conidia with noticeable conidial scars and conidial hila [4]. An

unidentified species of *Passalora* was discovered during our recent surveys and investigation of fascinating and unusual fungi from the Balaghat regions in the Indian state of Madhya Pradesh. Based on their solitary, acropleurogenous, straight-to-curved conidia and semimacronematous conidiophore, this species is classified in the genus *Passalora* and is illustrated and described as *Passalora flemingiae*.

MATERIAL AND METHODS

Surveys were carried out on frequently in Madhya Pradesh, India's Balaghat North Forest Division. After a field trip, the infected *Flemingia bracteata* leaves were collected and carried to the laboratory for examination. Lactophenol cotton blue was

utilized as the mounting medium to prepare the slides. A thorough examination of the morphological characteristics was done using a light microscope. At 400 X magnification, micrometry of conidiophores, and conidia was measured (30 each). Samples were also examined by the FEI NOVA NANO SEM-450 scanning electron microscope. The holotype of the novel species was deposited in Ajrekar Mycological Herbarium (AMH), Agharkar Research Institute Pune, India, and an isotype was deposited in the Mycological Herbarium (RJM), Department of Botany, Dr. Hari Singh Gour Central University, Sagar, M.P., India.

TAXONOMIC DETAIL

Passalora flemingiae sp. nov.

Infection spot hypogenous mostly situated towards the outer margin of leaf lamina, irregular. Colonies hypophyllous, irregular, black. Mycelium partly superficial partly immersed, septate, smooth, olivaceous brown 10.5 μm in width. Stromata absent. Conidiophores semimacronematous, mononematous, variable in length, branched, smooth, cylindrical, erect, flexuous, sympodial, less geniculate, rarely distinct scars, septate, pale brown, 52.5 x 285 - 4.5 x 9.0 μm . Conidiogenous cell integrated, terminal, polyblastic, acicatrized, pale olivaceous brown. Conidia solitary, ramo conidia absent, acropleurogenous, straight to curved, obconicotruncate at the base, smooth, hila inconspicuous, 2-6 transversely septate, pale olivaceous brown, 30-97.5 x 3-10.5 μm .

Type: On living leaves of *Flemingia bracteata* (Fabaceae) Balaghat, Ukwa forest, M.P., India, Oct. 2014 leg. J. Surywanshi, (Holotype, AMH-9729, Isotype RJM 330).

Etymology: Latin, *Flemingiae* derived from the name of the host genus.

RESULT AND DISCUSSION

Literature survey reveals that no *Passalora* species have ever been recorded on the host genus. However, two *Passalora* sps. have been found suitable for comparison with our collection viz., *P. cajani*, and *P.*

perfoliata [5] (Table 1). The tabular data show that the fungus in question shows only a little bit similarities with the comparing species while distinct from both in having flexuous, sympodial and less geniculate conidiophores, noncicatrized, conidiogenous cell, comparatively large conidia bearing inconspicuous hila as some important characters of morphotaxonomic value which concludes to describe and illustrate it as a new taxon of species rank.

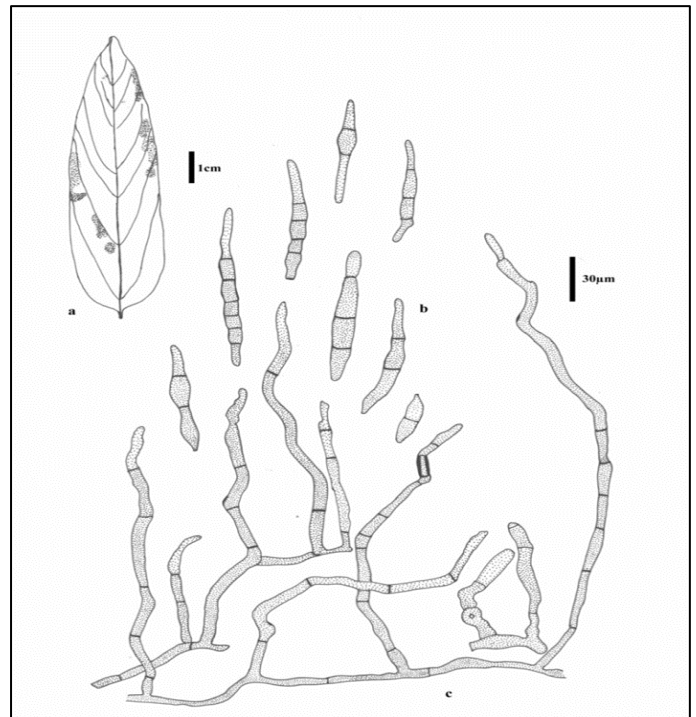


Fig.1: Camera Lucida drawing of *Passalora flemingiae* sp. nov. (Holotype AMH 9729), a. Symptom; b. conidia; c. hyphae and conidiophores, Scale bars: a= 1cm; b& c = 30 μm .

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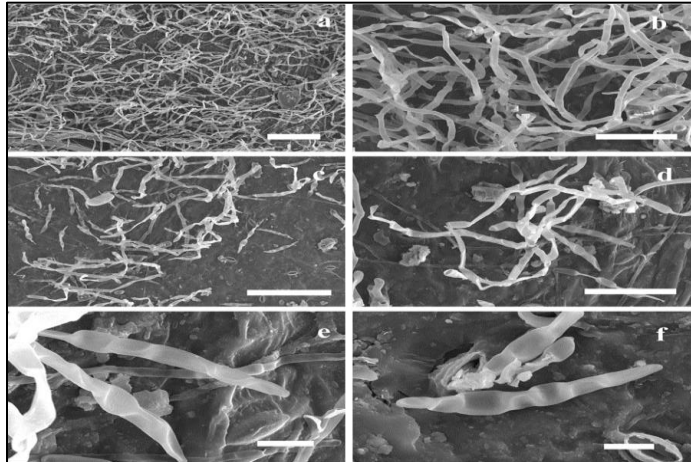


Fig.2: SEM (Scanning Electron Microscopy) of *Passalora flemingiae* sp. nov. (Holotype AMH 9729) a colony of fungus on leaf surface at 300X, b network of hyphae at 1000X c-d Conidiophores arising from stomatal cavity at 488X & 1099X respectively; e-f conidia at 3178X & 2854X respectively. Scale bars a&c = 100 μ m, b&d = 50 μ m, e-f = 10 μ m.

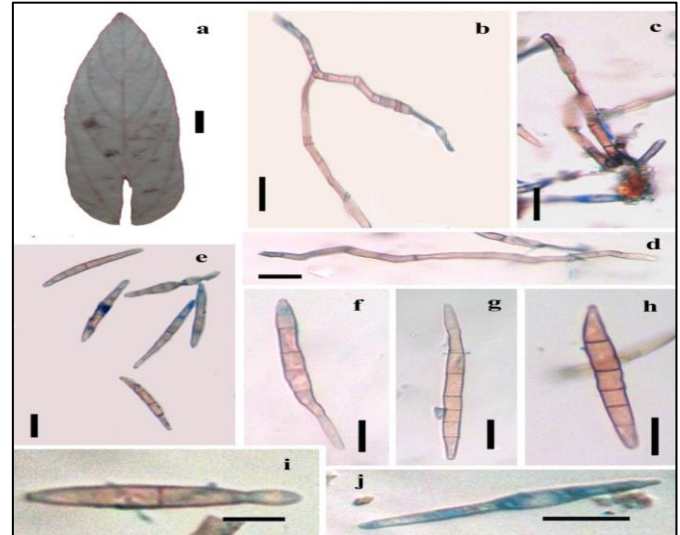


Fig.3: Photograph and Microphotograph of *Passalora flemingiae* sp. nov. (Holotype AMH 9729), a.Symptoms b. Branched hyphae; c. Conidiophores, d. Conidiogenesis. e-j. Conidia in different shape. Scale bar a= 1cm, b-k = 10 μ m.

Species	Spots & Colonies	stromata	Conidiophores			Conidia		
			Structure	Colour & Septation	Size (in μ m)	Structure	Colour & Septation	Size (in μ m)
<i>Passalora cajani</i> (Ellis 1971)	Round or angular brown spot. Hypophyllous	Absent.	Much branched, very variable in length.	Pale or mid pale olivaceous brown.	1-3 μ m thick near the base, broadening above to 4-7 μ m.	Mostly cylindrical, rounded at the ends.	Hyaline to mid pale olivaceous brown, 1-3 septate.	20-30x 4-6.
<i>Passalora perfoliata</i> (Ellis 1971)	Irregular, effuse, grayish brown. Hypophyllous	Absent.	Branched, variable in length.	Pale to mid pale olivaceous brown.	1-5 μ m thick.	Straight or curved, cylindrical, rounded at the end, fusiform.	Hyaline to pale olivaceous brown, usually 0-1 septate occasionally 2-3 septate.	10-45 x 3-5.
<i>Passalora flemingiae</i> sp. nov.	Hypogenous, hypophyllous, irregular, black.	Absent	Semimacro nematous, variable in length, branched, straight, flexuous, septate, sympodial, less geniculate	Pale olivaceous brown, 2-8 septate.	52.5 x 285 - 4.5 x 9.0.	Solitary, acropleurogenous, straight to curved, smooth, hila inconspicuous.	Pale olivaceous brown. 2-6 transversely septate.	30-97.5x 3-10.5.

Table 1: Comparative account of *Passalora flemingiae* sp. nov. with allied taxa.



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