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A new species of *Passalora crotoniicola* on *Croton persimilis* Mull. Arg. from forest flora of Ambikapur, Chhattisgarh

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Abstract

A field survey was conducted from shaded areas of Ambikapur, Chhattisgarh in India micro foliicolous fungi was found from Kulhadi forest in the month of September 2017. The flora of Ambikapur, C.G., India is dense and is suitable for the emergence of fungi. The forest survey of Ambikapur (C.G.) has resulted in the collection of undescribed novel fungus, affecting living leaves of Croton persimilis Mull. Arg. Based on morphological characters, microscopic images, SEM based analysis and comparison with other parallel taxa i.e Passalora jatrophigena infecting Jatropha sp. and Passalora cnidoscolifolii infecting Cnidoscolus sp. a novel species of Passalora namely Passalora crotoniicola has been described.

Keywords: *Foliicolous fungi, flora and novel fungi*

INTRODUCTION

Chhattisgarh is known for its prosperous plant and fungal diversity. Forest flora of Ambikapur is rich, little or few attention is drawn to fungal diversity of Ambikapur. During the survey of Kulhadi forest, Ambikapur, Chhattisgarh massive fungal samples were collected on economic and medicinally important plant and one of them was *Croton persimilis* Mull. Arg (Euphorbiaceae) [6]. Regular survey of Kulhadi forest was conducted for fungal sample collection during every season. The number of fungi till date is likely 2.2 to 3.8 million fungal species, which is only 8% [4]. The plant is known for its medicinal value i.e. antioxidants and anticancer activity [7]. The genus *Passalora* was introduced by Fr. Summa vagetabilium Scandinaviae (1849) belongs to Mycosphaerellaceae family. Conidia of this genus are solitary, acropleurogenous, olivaceous brown, smooth, subcylindrical to very long ellipsoidal [3]. The present fungal species is never been previously disclosed, hence contributes to a novel fungal species.

MATERIALS AND METHODS

Survey was conducted in every alternate month of 2017 at Ambikapur, Chhattisgarh, India. Fungal infected leaves of *Croton persimilis* was collected in clean polythene bags with a tag with area, date of collection, local and botanical name, symptoms and location mentioned [1,5].

Infected leaves with lesion appearance were scraped on a clean slide mounted along with lactophenol cotton blue and covered with coverslip (Khalkho *et al.,* 2020). Olympus CX2li trinocular microscope was used for morphological features identification. Samples were dried therefore preparative treatment was not given (Bhardwaj *et al.,* 2020). SEM images were clicked under double beam FEI Nova nano SEM-450 at Dr. Harisingh Gour Vishwavidyalaya, Sagar, M.P.

The sample is reposed in Ajrekar Mycological herbarium- AMH, Pune, Maharashtra, India. The sample is also deposited in Departmental Herbarium of Botany, Dr. Harisingh Gour Vishwavidyalaya, Sagar, M.P.

RESULT

Taxonomy and Description

Passalora crotoniicola A. D. Khalkho, S. Nistala and A.N. Rai sp. nov.Figs. 1, 2, 3 and 4 Type: India, Chhattisgarh, Ambikapur, on living leaves of *Croton persimilis* Mull. Arg (Euphorbaceae), Kulhadi forest, Ambikapur, Chhattisgarh. September 2017 leg. Anshu Deep Khalkho (Holotype-AMH- 10342, Isotype RAH-42)

Etymology: Novel species name is derived from the host plant genus.

Symptoms hypogenous, hypophyllous, irregular, scattered, all over the leaf surface, 0.5-4 x 0.5-3 cm, brown to black. Conidiophores macronematous, mononematous, solitary, unbranched, straight to flexuous, small, olivaceous brown, smooth, 1 septate, 8-11 µm x 2.50-4.00 µm. Conidia solitary, acropleurogenous, olivaceous brown, smooth, subcylindrical to very long ellipsoidal, hilum slightly thickened, 0-3 septate, 9.10 µm-19.04 x 3.29-3.85 µm.

DISCUSSION AND CONCLUSIONS

After surveying various mycological literature, new taxon is compared with the taxa reported on the same host family i.e Euphorbiaceae i.e *Passalora jatrophigena* Braun, U., & Freire, F. O. (2004) (infecting Jatropha sp.) and *Passalora cnidoscolifolii* (Bat., Peres & O.A. Drumm.) U. Braun & F. Freire (2004) (infecting *Cnidoscolus* sp.). Some more similar species of *Passalora* are *P. golaghati* [9] and *P. sicerariae* [8].

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It was observed that the novel fungal species is drastically different by symptomatology with larger infection spots, short and less wider conidiophores by having only 1 septa and small conidia with fewer septa to defend against the comparing fungal species. Therefore, the present species *Passalora crotoniicola* is justified to place as new taxon of species rank.

Fig. 1: *Croton persimilis* plant showing symptoms of *Passalora crotoniicola* sp. nov. (Holotype- AMH- 10342) (a, b, c) Exhibiting symptoms on leaves.

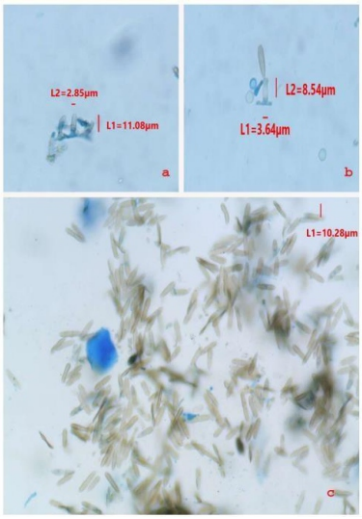

Fig 2: Microscopic images of *Passalora crotoniicola* sp. nov. on leaves of *Croton persimilis* (Holotype-AMH- 10342) (a) Conidiophores (b) Connection of conidia along conidiophore (c) Bunch of conidia with various shape and size.

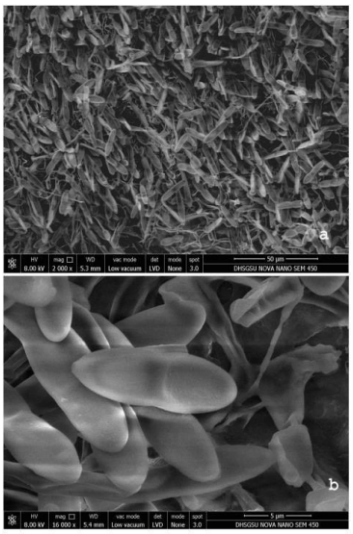

Fig 3: SEM (Scanning Electron Microscope) images of *Passalora crotoniicola* sp. nov. on plant *Croton persimilis* (Holotype-AMH- 10342). (a) Cluster of conidia at 2000x magnification (b) Cluster of conidia at 16000x magnification.

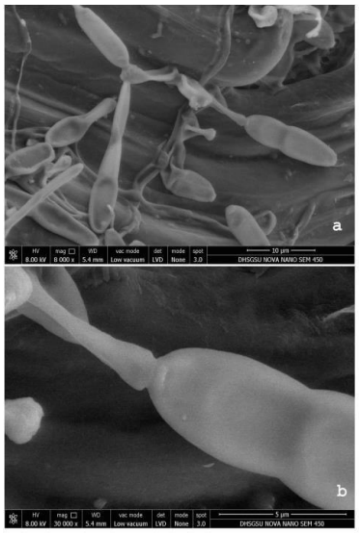

Fig 4: SEM (Scanning Electron Microscope) images of *Passalora crotoniicola* sp. nov. on plant *Croton persimilis* (Holotype-AMH-10342). (a) Connection of conidia with conidiophore at 8000x magnification (b) Connection of conidium with conidiophore at 30 000x magnification.

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