



Short Communication

Two rare hyphomycetes fungi from Maharashtra, India

Ninad Dharkar¹ and Dilip Hande^{2*}

¹S.P.M. Science and Gilani Arts Commerce College, Ghatanji, Dist. Yavatmal- 445301, MS, India

²Shri. Shivaji Science College Amaravati, Dist. Amaravati- 44603, MS, India
dvhande@gmail.com

Available online at: www.isca.in, www.isca.me

Received 25th April 2019, revised 24th July 2019, accepted 7th August 2019

Abstract

The communication include two hyphomycetes fungi from Maharashtra, India viz, *Stachybotrys indicus* sp.nov and *Volutellavaijapurellasp.nov*. The description and illustration of species under study are rare.

Keywords: *Stachybotrys*, dark brown conidia, *Volutella* hyaline conidia, brown setae.

Introduction

The genus *Stachybotrys* was established by Corda in 1837. *Stachybotrys* are saprophytic fungi commonly in soil¹. *Stachybotrys* is also recorded on submerged wood in mangroves². The genus *Volutella* was established by Tode. *Volutella* is a wide spread genus of the family Nectriaceae. *Volutella* is a facultative plant pathogen³. The species under study were compared with other known species of *Stachybotrys* and *Volutella* and treated as new species, the detailed descriptions are given below.

Materials and methods

The specimens in question were collected by standard procedure. The semi-permanent slide were prepared with the help of cotton blue stain. The material were identified by using keys and literature⁴⁻¹⁵). The exicatii were deposited in Ajrekar Mycological Herbarium, A(ARI) Pune 411004.

Taxonomy: *Stachybotrys indicus* sp.nov. (Figure-1): (Etym : Host *Canna indica* L.): Colonies pulvinate, black, mycelium immersed in substrate conidiophores loosely intertwined, flexuous, separate, smooth measure 42.0-247µm long; 3.8µ medium, conidiogenous cells monophialidic discrete in groups

of 3-6 at the apex of each conidiophore, measure 11.4-15.2µm long; conidia acrogenous, simple sub spherical to ellipsoidal, smooth, dark brown to black measure 7.6-11.4x3.8-7.6µm.

Holotype: On dead leaves of *Canna indica* L. (Fam: Cannaceae) Legit. N.S.D. at Bothli Panjra Dist. Wardha, MS on 12/12/05 AMH No. 9085 (Holotype).

***Volutellavaijapurellasp.nov.* (Figure-2): (Etym: locality Vaijapur):** Sporodochia dispersed of gregarious, disc-shaped, sub-epidermal embedded, black, stromatic, measure 114.0-304.0x76.0-171.0µm; setae dark, brown, erect or slightly curved, tapering toward tip, broad at base, septate, measure 45.6-176.0x3.8-7.6µm; conidiophores simple densely arranged that would make a membrane as if, slightly brown with flat tips for support to the simple conidium, borne at the tip, measure 19.0-22.8µm long; conidia hyaline, unicellular falcate, semilunar-shaped, acute, apex, measure 15.2-26.6x3.8µm.

Holotype: On dead stem of Unidentified host legit N.S.D. and D.V.H at Vaijapur, (Dist. Aurangabad) on 13-10-2004 No. AMH 9010 (Holotype).

Table-1: Shows distinctness of various known species of *Stachybotrys*

Species	Conidiophore (µm)	Conidiogenous cell (µm)	Conidia (µm)	References
<i>S.chlorohalonata</i>	44-69	8-11x4-6 m	8-10.5x4-5.5	8
<i>S. palmae</i>	110-230x6.3-10	11-12.5x6-7.5	10-15x5-7.5	13
<i>S.cardylines</i>	95-160x5.8 8	11-14x3.8-54	7-8.3x3.2-5.1	13
<i>S.biformis</i>	50-75x3.4	8-12x3.5-4.5	7.5-9.5x2.5-3.3	11
<i>S.yushuemis</i>	59-90x3-4.5	11.5-14.5x5-6.5	10.5-13.5x3-4	11
<i>S.indicussp. nov.</i>	42.0-247x3.8	3.8-5.4	7.6-11.4x3.8-7.6	Understudy

Table-2: Taxonomical Study of *Volutella* species.

Species	Spordochia (μm)	Setae $\mu\text{(m)}$	Conidiophore (μm)	Conidia (μm)	References
<i>V. kamati</i>	0.3-0.5	38.5-111.8x4.3-7.5	10.7-30.0x3.2-5.2	15.5-23.5x4.3-5.3	5
<i>V. lini</i>	160x18.7- 45.8	50-200x5	8-12x1.5	8-14 x 1.2-1.6	10
<i>V. agavella</i>	66.0-150x40-196	39-96.0x4	15.4-22.6x3.6-6.6	19-22.4x2.5-4.8	12
<i>V. ciliata</i>	300-560	735x5-7.5	--	5-7x2-2.4	3
<i>V.vaijapurellasp.nov</i>	114.0-304.0x76-171.0	45.6-176.0x3.8-7.6	19.0-22.8 long	15.2-26.6x3.8	Understudy

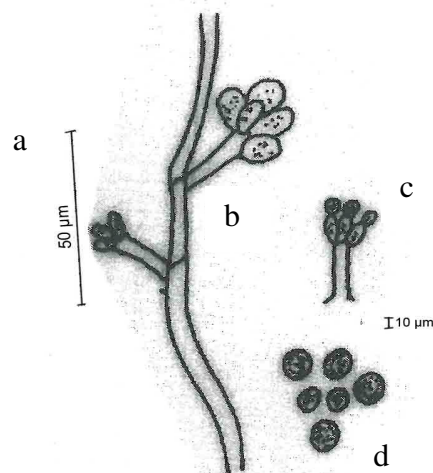


Figure-1: *Stachybotrys indicus* sp.nov. Figure-a,b, Conidiophore with Conidia, (c) Conidiogenous cell, (d) Conidia.

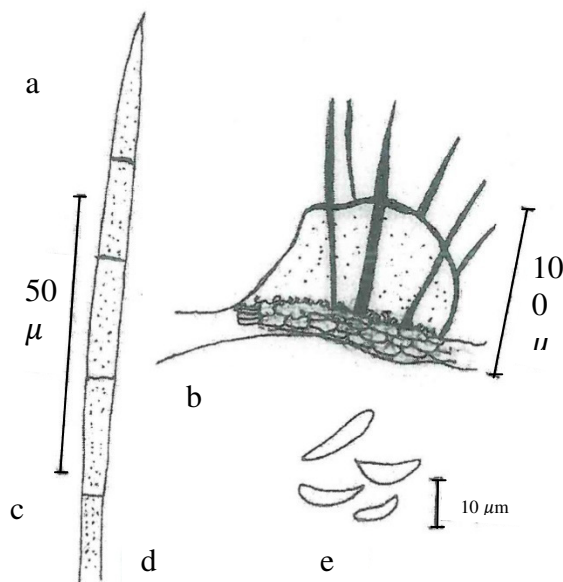
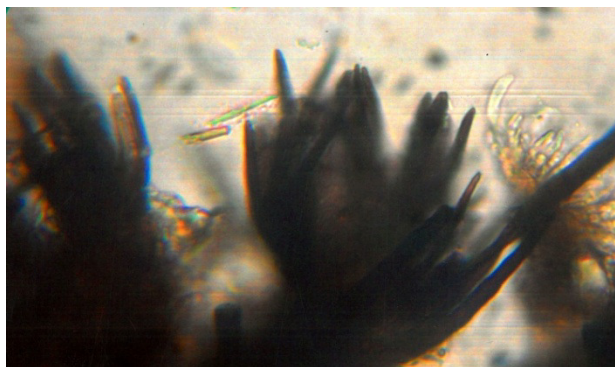


Figure-2: *Volutellavaijapurellasp.nov.* Figure-a,b, Habit; Figure-c, Setae & indicates attachment of Conidia (d) Setae (e) Conidia.

Results and discussion

A comparison of species reveals that the species under study have larger conidiophore than *S.biformis*, *S.chloroholonata*, *S.yushuemis* and smaller than *S. palmae*. Conidia are larger than *S.cardylines* and *S.biformis*. Thesporodochia of *Volutellavaijapurella* is larger than *V. agavella* and *V.lini*. Setae the identifying character are smaller than *V.ciliata*. The size of conidia is smaller than *V.lini* and *V.cilita*. Overall taxonomical data in Table-1 and Table-2 indicates that the species included in this communication are treated as new.

Conclusion

The morphotaxonomy of refereed species *Stachybotrys* and *Volutella* are different therefore these taxa termed as new species. The taxa *Stachybotrys indicus* sp. nov reported first time from Bothli Panjra forest Wardha District Maharashtra.

References

1. Ellis M.B. (1976). More Dematiaceous Hyphomycetes C.M.I. Kew England. Pub. 1-207.
2. Maria G.L. and Sridhar K.R. (2003). Diversity of filamentous fungi on woody litter of five mangrove plant species from the southwest coast of India. *Fungal Diversity*, 14, 109-126.
3. Babu A.G., Kim S.W., Yadav D.R., Adhikari M., Kim C., Lee H.B. and Lee Y.S. (2015). A New Record of *Volutella ciliata* Isolated from Crop Field Soil in Korea. *Mycobiology*, 43(1), 71-74.
4. Ainsworth G.C., Sparrow F.K. and Sussman A.S. (1973). The Fungi An Advanced Treatise Vol. IV A taxonomic review with keys; Ascomycetes and Fungi Imperfecti. Academic Press New York, 621.
5. Ananthanarayanan S. (1962). *Volutellakamati* sp. nov. from India. *Mycopathet. Mycol.Appl.*, 18, 147-148.
6. Barnett H.L. and Hunter B.B. (1972). Illustrated genera of imperfect fungi. Burgess Publishing Company, 240.
7. Bilgrami K.S., Jamaluddin and Rizwi M.A. (1991). Fungi of India list & references. Today and Tomorrow Printer and Publishers, New Delhi, 798.
8. Andersen B., Nielsen K.F., Thrane U., Szaro T., Taylor J. W. and Jarvis B.B. (2003). Molecular and phenotypic descriptions of *Stachybotrys chlorohalonata* sp. nov. and two chemotypes of *Stachybotrys chartarum* found in water-damaged buildings. *Mycologia*, 95(6), 1227-1238.
9. Jamaluddin S., Goswami M.G. and Ojha B.M. (2004). Fungi of India (1989-2001). *Scientific Publishers, (India), Jodhpur*, 326.
10. Mukerji K.G., Tewari J.P. and Rai J.N. (1968). *Volutella lini* sp. nov. from India. *Transactions of the British Mycological Society*, 51(2), 337-339.
11. PAN HaoQin, Kong jin-Hua, XUJun-jie, ZHANG yue-Li, ZHANG tian-Yu (2014). Four new species of *Stachybotrys* and a key to species of the genus known from soil in China. *Mycosystema*, 33(4), 785-792.
12. Shahezad M.A. (2014). A Rare Mitosporic Fungi from Ghatanji (M.S.) India. *International Journal of Researches In Biosciences, Agriculture & Technology*, 2(Vol.-II), 493-496.
13. Pinruan U., McKenzie E.H., Jones E.G. and Hyde K.D. (2004). Two new species of *Stachybotrys*, and a key to the genus. *Fungal Diversity*, 17, 145-157.
14. Wu, yue-Ming and Tianyuzhang (2009). Two new sp. of *Stachybotry* from soil. *Mycotaxon*, 109:461-464.
15. Washington D.C. (2016). Grain Fungal diseases and mycotoxin reference published by United States. *Dept. of Agri.*, 1-45.