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TAXONOMICAL STUDY OF FUNGAL GENUS MELIOLA FRIES FROM SOUTHERN KOLHAPUR DISTRICT OF MAHARASHTRA AND ITS NEIGHBOURING AREAS (INDIA)[#]

*Tanaji R. Kavale**

Abstract

An interesting eight taxa of Meliolaceae belonging to the genus *Meliola* Fries are illustrated and described. In present study, these taxa described as one variety and four species are new to Fungi of Maharashtra state viz. *Meliola dichapetali* Hansf. and Thirum., *M. ramosii* H. Sydow & P. Sydow, *M. stenospora* Wint., *M. tamrindi* H. Sydow & P. Sydow and *M. capensis* (Kalch. and Cooke) Theiss. var. *schleicherae* Hosagoudar and Pillai respectively; two varieties are new to Fungi of Goa state viz. *M. cansjerae* Hansf. and Thirum. var. *indica* Hosagoudar and *M. mucunae-acuminatae* Hansf. var. *indica* Hosagoudar; one species on new additional host viz. *M. phaseoli* Thite ex Hosagoudar in Hosagoudar from Maharashtra state.

Keywords: Mycotaxonomy, Ascomycetes, Meliolaceae, *Meliola*, new records

[#]Short Communication

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Introduction

During the Mycotaxonomical study authors came across some interesting species of the genus *Meliola* Fries which are collected from Southern part of Kolhapur district and its neighbouring areas. The genus *Meliola* was established by Fries in 1825 and emended by Bornet in 1851 with the type species *M. trichostroma* (Kunze) Toro. The genus belongs to the family Meliolaceae of the order Meliolales (Pyrenomycetes), parasitically occur on various host plants and generally known as black mildew fungus. In present investigation, eighty taxa of the genus *Meliola* Fries are studied and described. Out of eight taxa one species proposed as on new additional host and others becomes new records to the fungi of Maharashtra and Goa state.

Observation

Key to the Species of the Geuns *Meliola* Studied

1. Mycelial setae simple and acute to obtuse----------2
1′ Mycelial setae simple and dentate---------- *M. cansjerae* Hansf. and Thirum. var. *indica*
2. Mycelium straight to sub-straight----------3
2′ Mycelium undulate----------4
3. Mucronate hyphopodia mixed with capitate hyphopodia----------5
3′ Mucronate hyphopodia on seprate mycelial hyphae----------6
4. Colonies epiphyllous, thin, more than 3 mm in diam.---------- *M. ramosii*
4′ Colonies amphigenous, dense, less than 3 mm in diam.----------*M. tamrindi*
5. Capitate hyphopodia are alternate---------- *M. phaseoli*
5′ Capitate hyphopodia are alternate to opposite----*M. mucunae-acuminatae* Han. var. *indica*
6. Ascospores more than 40 µm long----------7
6′ Ascospores less than 40 µm long---------*M. capensis* (Kal. & Cook)Thei. var. *schleicherae*
7. Colonies hypophylluos, thin; ascospores 46-50 µm long---------- *M. dichapetali*
7′ Colonies amphigenous, dense; ascospores 40-45 µm long---------- *M. stenospora*

Meliola cansjerae Hansf. and Thirum. var. ***indica*** Hosagoudar, Nova Hedwigia, 56 : 196, 1993; Text Plate (figs. 6-9).

Habit

On the leaves of *Cansjera rheedii* Gamble (Fam.: Opiliaceae), Asnoda (Goa), 30-9-2001, T. R. Kavale, HCIO- 45585 and WIF- 1988.

Remarks

Hosagoudar et al., (1993) reported the above variety on the leaves of *Cansjera rheedii* Gamble from Nilgiris (Tamil Nadu). Hosagoudar and Goos (1990) also reported one more species viz. *M. cansjericola* Hosagoudar on the same host from Calvary Mount, Idukki (Kerala) in which ascospores are 3-septate. The present collection collected on the same host is well matched to the variety viz. *M. canjerae* Hansf. and Thirum. var. *indica* Hosagoudar in all morphological respect, hence referred to it. It makes new record to the Fungi of the Goa State.

Meliola capensis (Kalch. and Cooke) Theiss. var. ***schleicherae*** Hosagoudar and Pillai, Nova Hedwigia, 58 : 537, 1994.

Habit

On the leaves of *Schleichera oleosa* Willd. (Fam.: Sapindaceae), Ramtirth, (Tal.-Ajara, Dist.-Kolhapur, M. S.), 9-6-2003, Ranjana Kavale, HCIO-45582 and WIF- 1989.

Remarks

Hosagoudar et al. (1994) reported this variety on *Schleichera oleosa* Willd. from Vettiyar, Mavelikara, Kerala (India). The present collection collected on the same host and matched well in all morphological respects except colony characters to the variety viz. *M. capensis* (Kalch. and Cooke) Theiss. var. *schleicherae* Hosagoudar and Pillai and therefore, referred to it. It makes a new record to the Fungi of the Maharashtra state.

Meliola dichapetali Hansf. and Thirum., Farlowia 3 : 292, 1948.

Habit

On the leaves of *Dichapetalum gelonioides* Roxb. (Fam. : Dichapetalaceae), Amboli, (Dist.-Singhudurg, M. S.), 17-9-2002, T. R. Kavale, HCIO-45580 and WIF- 1990.

Remarks

Hansford and Thirumalachar (1948) have reported this species from Balenhonour (K.S.) on the same host. The present collection has been collected on the same host and found to be morphologically identical and thus, referred to it. It makes a new record to the Fungi of the Maharashtra State.

Meliola mucunae-acuminatae Hansf. var. ***indica*** Hosa., Nova Hedwigia 56 : 198, 1993.

Habit

On the leaflets of *Mucuna gigantea* (Willd.) DC. (Fam.: Fabaceae), Asnoda, (Goa), 30-9-2001, T. R. Kavale, HCIO-45586 and WIF- 1994.

Remarks

Hansford (1946) has reported two species of *Meliola* viz. *M. mucunae-acuminatae* Hansf. and *M. mucunae* Hansf. on *Mucuna acuminata* and *Mucuna* species from Uganda.

There are two varieties of the same species has been reported from India by Hosagoudar (1990, 1993) viz. *M. mucunae-acuminatae* Hansf. var. *indica* Hosagoudar from Anmode (M.S.) on *Mucuna pruriens* (Linn.) DC. collected by A.N.Thite (1974) and *M. mucunae* Hansf. var. *hirsutae* Hosagoudar from Idukki, Kerala on *Mucuna hirsute* Wight & Arn. The present collection collected on *Mucuna gigantea* (Willd.) DC. has been compared with these two varieties and morphologically matched well to *M. mucunae-acuminatae* Hansf. var. *indica* Hosagoudar and thus, referred to it. It makes new record to the Fungi of the Goa State and *Mucuna gigantea* (Willd.) DC. is the additional host.

Meliola phaseoli Thite ex Hosagoudar in Hosagoudar, Meliolales of India, P. 283, 1996; Text Plate (figs.1-5).

Habit

On the leaflets of *Phaseolus grandis* Dalzell (Fam.: Fabaceae), Salgaon, (Tal.-Ajara, Dist. Kolhapur, M.S.), 24-9-1999, T. R. Kavale, HCIO- 45587 and WIF- 1995.

Remarks

This species has been reported by Thite, A.N. (1971) on the leaflets of *Vigna khandalensis* (Sant.) Raghavan & Wadhwa (= *Phaseolus khandalensis*) from Kolhapur (M.S.). The present collection collected on *Phaseolus grandis* Dalzell matched well in all morphological respects. It is as an additional host record from Maharashtra.

Meliola ramosii H. Sydow & P. Sydow, Ann. Mycol., 12 : 552, 1914.

Habit

On the leaves of *Homonoia riparia* Lour. (Fam.: Euphorbiaceae), Chitra River (Tal.-Ajara, Dist.- Kolhapur, M.S.), 27-4-2003, T. R. Kavale, HCIO-45584 and WIF- 1996.

Remarks

H. Sydow and P. Sydow (1914 b) has been reported this species on the leaves of *Homonoia riparia* Lour. from Philippines. Hosagoudar (1982) has also reported the same species on the same host from Kerala. The present collection has been collected on the same host matched well in all morphological characters except larger perithecia and thus, referred to it. It makes new record to the Fungi of the Maharashtra State.

Meliola stenospora Wint., Hedwigia 25 : 97, 1886.

Habit

On the leaves of *Piper trichostachyon* Cass. (Fam.: Piperaceae), Amboli (Dist.-Singhudurg, M.S.), 25-12-2003, T. R. Kavale, HCIO-45581 and WIF- 1997.

Remarks

Fourteen species of the genus *Meliola* are so far known on the different species of the host genus *Piper* (Hansford, 1961 and 1965). *Meliola stenospora* Wint., has been reported mostly on the members of the family Piperaceae but it is also reported by

N.V.Sundaram (1952) from Tuliparamba (Malabar, Kerala) on *Strychnos nux-vomica* Linn. belonging to family Loganiaceae. Patil, C.R. (1990) has proposed a new species in his approved thesis *M. trichostachynosis* sp. nov. collected on the same host viz. *Piper trichostachyon* Cass. on the basis of smaller size of ascospores and head cells are larger and 3-5 lobed. A new species proposed by Thite and Miss Patil, S.D. (1983) viz. *M. piperae* Thite and Patil, on *Piper nigrum* Linn. on the basis of larger mycelial cells and ascospores (35-75 x 125-155 µm.). Howevre, M.S. Patil (1999) restudied the type material and merged as synonym to the variety viz. *M. stenospora* Wint. var. *major* Hansf. recorded on *Piper hookeri* Miq. Present collection collected on *Piper trichostachyon* Cass. matched in all morphological respect to the *M. stenospora* Wint. except larger colonies and larger ascospores, hence referred to it. It makes a new record to the Fungi of the Maharashtra State and *Piper trichostachyon* Cass. is the additional host.

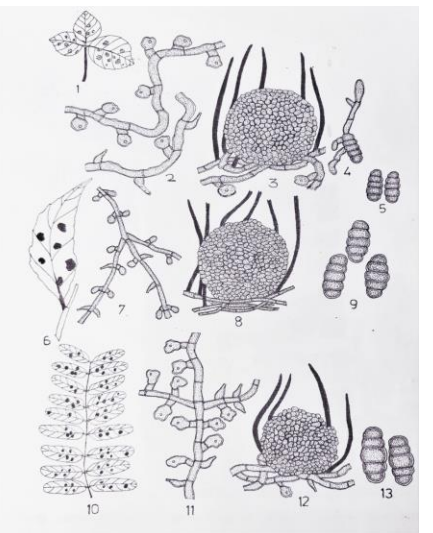
Meliola tamrindi H. Sydow & P. Sydow, Ann. Mycol. 10: 79, 1912; Text Plate (figs.10-13).

Habit

On the leaflets of *Tamarindus indica* Linn. (Fam.: Caesalpinaceae), Ramtirth (Tal. Ajara, Dist. Kolhapur, M.S.), 27-2-2002, T. R. Kavale, HCIO-45583 and WIF- 1998.

Remarks

Sydow, H and P. Sydow (1912) reported this species from Philippines. The same species also reported from Africa by Hansford and Deighton (1948). In Inidia, the species is mostly confined to Karnataka and Kerala State and reported by different workers (Hosagoudar et al., 1987, 1995). The Indian collection as commented by Hosagoudar (1995) shows many differences. However, the present collection matched well in all respects except colonies, which are slightly smaller, hence, referred to it. It makes new record to the Fungi of the Maharashtra State.



Figs. ***Meliola phaseoli*** Thite and Hosagoudar, (figs. 1-5)on the leaves of *Phaseolus grandis* Dalzell 1. Habit: Infected leaflets with black colonies on upper side, x 1/3 of N.S., 2. Mycelium with capitate hyphopodia, x 2000, 3. Ascocarp with mycelial setae, x 60, 4. Germinated ascospore, x 615, 5. Ascospores, x 615; ***Meliola cansjerae*** Hansf. and Thirum. var. ***indica*** Hosagoudar (figs. 6-9) on the leaves of *Cansjera rheedii* Gamble 6. Habit: Infected leaf showing black colonies on upper side, x N.S., 7. Mycelium with capitates hyphopodia and mucronate hyphopodia, x 3870, 8. Ascocarp with mycelia seate x 160, 9. Ascospores, x 650; ***Meliola tamrindi*** H. & P. Sydow (Figs. 10-

13) on the leaflets of *Tamarindus indica* Linn., 10. Habit: Infected leaflets with black colonies on upper side, x N.S., 11. Mycelium with capitates hyphopodia and mucronate hyphopodia, x 4250, 12. Mycelial seate grouped around Ascocarp x 110, 13. Ascospores, x 675.

Conclusion

In present investigation eight taxa of the genus *Meliola* Fries, studied by using update literature and comparing them with the existing taxa of *Meliola* Fries. Finally it is concluded that out of eight taxa, one variety and four species are as new records to Fungi of Maharashtra state, two varieties are as new records to Fungi of Goa state and one species reported on new additional host from Maharashtra. The genus *Meliola* Fries is found quite dominant mostly on the dicotyledonous host plants.

Acknowledgement

The authors are thankful to Principal, Ajara Mahavidyalaya, Ajara for providing the laboratory facilities and the colleagues and for their moral support. The author also acknowledged Curator, HCIO New Delhi and Head of the Botany Department, Shivaji University, Kolhapur for providing accession number to the described fungal specimen.

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TWO NEW RECORDS OF DEMATIACEOUS HYPHOMYCETES FROM INDIA

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Abstract

An interesting two species of Dematiaceous Hyphomycetes belonging to the genus *Pseudospiropes* M. B. Ellis and *Spilodochium* H. Syd. are illustrated and described. These species viz. *Pseudospiropes leptotrichus* (Cooke and Ellis) M. B. Ellis and *Spilodochium acaciae* Alcorn are recorded first time from India on the leaves of new additional hosts viz. *Bridelia montana* Willd. (Fam.-Euphorbiaceae) and *Dolichandrone fulcata* Seem. (Fam.-Bignoniaceae) respectively.

Key words : Mycotaxonomy, Hyphomycetes, Dimatiaceae, new to India.

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Introduction

During the study of Mycotaxonomy from Southern Kolhapur district and its neighbouring areas, the authors came across an interesting collections of the *Pseudospiropes leptotrichus* (Cooke and Ellis) M. B. Ellis and *Spilodochium acaciae* Alcorn on the leaves of *Bridelia montana* Willd. (Fam.-Euphorbiaceae) and *Dolichandrone fulcata* Seem. (Fam.-Bignoniaceae) respectively. These species are recorded first time from India therefore, it makes new records to the Fungi of India. The genus *Pseudospiropes* M. B. Ellis known by its 37 species and *Spilodochium* H. Syd., by its 5 species from different countries including India. These species also recorded first time on the hosts viz. *Bridelia montana* Willd. and *Dolichandrone fulcata* Seem. respectively, and hence *Bridelia montana* Willd. and *Dolichandrone fulcata* Seem. are the additional host records.

Result and Discussion

Pseudospiropes leptotrichus (Cooke and Ellis) M. B. Ellis (figs. 1-4)

Basio.: *Helminthosporium leptotrichum* Cooke and Ellis, Grevillea, 8 : 13, 1879.

= *Brachysporium leptotrichum* (Cooke and Ellis) Sacc., Syll. Fung., 4 : 426, 1886.

= *Pleurophragmium leptotrichum* (Cooke and Ellis) Hughes, Can.J.Bot., 36 : 798, 1950.

Colonies foliicolous, effuse, dark blackish-brown, hypophyllous, covered at most the whole leaf surface; stroma well developed and consisting of a few cells in substomatal region, pseudoparenchymatous; setae and hyphopodia absent; conidiophores erect, straight or flexuous, unbranched, septate, with the septa close together near the base, dark brown, highly geniculate, enlarged and paler at the apex, conidial scars prominent, up to 103-140 µ m long, 5-7 µm thick and at the tip 7-8 µm thick; conidia solitary, simple, ellipsoidal, 3-septate, sub-hyaline or olivaceous-brown, smooth, 18-26 x 7-9 µm.

Habit

On the dead leaves of *Bridelia montana* Willd. (Fam.: Euphorbiaceae) Ramtirth (Tal.-Ajara, Dist.-Kolhapur, M.S.), 27-2-2000, T. R. Kavale, HCIO- 45577 and WIF - 2040.

Spilodochium acaciae Alcorn, Trans. Br. Mycol. Soc., 63 : 598-599, 1974; (figs. 5-7)

Colonies amphigenous, mostly epiphyllous, puctiform or effuse, dark brown to black, powdery; stromata erumpent and pulvinate; conidia formed in branched acropetal chains which arise directly from cells of stroma, oblong or cylindrical, rounded at the ends,

olivaceous-brown or reddish-brown, verrucose, mostly 0, 1 or 2-septate, often constricted at the septa and 11-29.6 x 7-11 µm.

Habit

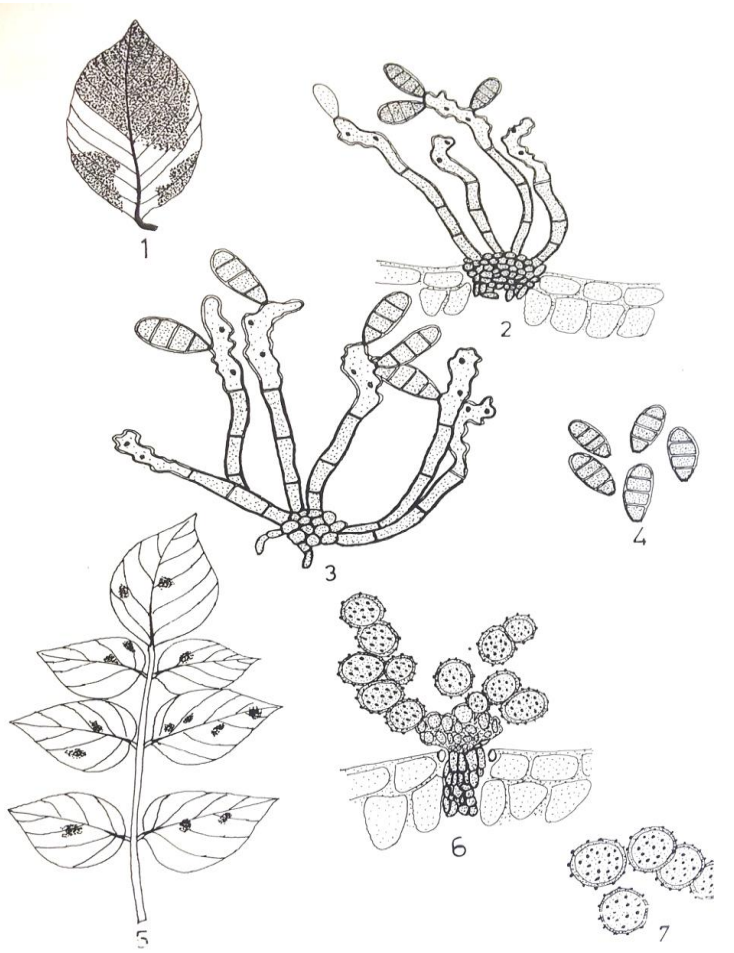
On the living leaflets of *Dolichandrone fulcata* Seem. (Fam.: Bignoniaceae), Ardal (Tal.-Ajara, Dist.-Kolhapur, M. S.), 21-2-2004, T. R. Kavale, HCIO- 46903 and WIF - 2041.

Conclusion

The species *Pseudospiropes leptotrichus* (Cooke and Ellis) M. B. Ellis has been reported by M. B. Ellis (1971) from America on dead oak wood and old *Polyporus*. The present collection collected on dead leaves of *Bridelia montana* Willd. agrees well in all morphological characters except its shorter and highly geniculate conidiophores at the apex and hence, referred to it. It makes new record to the fungi of India and *Bridelia montana* Willd. is an additional host. While the species *Spilodochium acaciae* Alcorn has been reported by Alcorn (1974) from Australia on the phyllodes of *Acacia aulacocarpa* (Fam.: Mimosaceae). Present collection collected on the living leaflets of *Dolichandrone fulcata* Seem. agreed well in all morphological respects and hence, referred to it. It makes new record to the Fungi of India and *Dolichandrone fulcata* Seem. is an additional host.

Acknowledgement

The authors are thankful to Principal, Ajara Mahavidyalaya, Ajara for providing the laboratory facilities and the colleagues and for their moral support. The author also acknowledged Curator, HCIO New Delhi and Head of the Botany Department, Shivaji University, Kolhapur for providing accession number to the described fungal specimen.



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Figs. *Pseudospiropes leptotrichus* (Cooke and Ellis) M. B. Ellis (figs. 1-4) on the living leaves *Bridelia montana* Willd.1. Habit-infected leaf showing colonies on lower side X NS, 2. T. S. of infected leaf showing stroma with conidiophores with young and mature conidia X 1875, 3. Conidiophores with conida X 390, 4. Three septate conidia X 575; Figs. *Spilodochium acaciae* Alcorn (figs. 5-7) on the living leaves of *Dolichandrone fulcata* Seem. 5. Habit-

infected leaflets showing black punctuate colonies on upper side X NS, 6. T. S. of infected leaflets showing stromata bearing conidogenous cells and conidia in chains X 2750, 7. Matured verrucose conidia X 405.

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