THE GENUS HAPLOSPORELLA IN INDIA

by

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(with 4 figs.)

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The genus *Haplosporella* was originally erected by SPEGAZZINI in (1880) with *Haplosporella chlorostroma* as the type species. It remained unrepresented in Indian flora until 1916. It was reported by PETRAK & SYDOW as *Haplosporella capparidis* which is raised to the generic rank by DIEDICKE (1926) as *Pleosphaeropsis*. Since then eight species of *Haplosporella* have been described until 1958. Recently TILAK (1960-63), KALANI (1963-64) and ROY (1964) reported some more species.

The genus is characterised by pycnidia clustered in a black wart like stroma which bursts out of the bark, saprophytic or parasitic. Conidiophores, small, hyaline and simple. Conidia large, dark brown, one celled, ovoid to oblong, interspersed with conidiophores are some sterile threads which are hyaline and septate.

The genus *Haplosporella* has been considered by several workers as synonymous with *Sphaeropsis* but latter differs in being non-stromatic. Since the generic name *Sphaeropsis* has been applied to the perfect stage in ascomycetes and as suggested by PETRAK & SYDOW (1926) it should be transferred to *Haplosporella*. Three species i.e. *H. capparidis* DIED., *H. dalbergiae* (DIED.) PETRAK & SYDOW and *H. gossypii* (DIED.) have been transferred to *Pleosphaeropsis*. However *Haplosporella* is similar to *Pleosphaeropsis* except the non-mucose spores.

During their investigations and revision of different genera of Deuteromycetes from India, authors came across with dried stems of *Acacia arabica* WILLD, *Azadirachta indica* JUSS, *Anona squamosa* L., *Anona reticulata* L., *Vinca rosea* L. and *Salmalia malabarica* SCHOTT. & ENDLE, infected by some black fungus. The detailed examination revealed these to be the species of *Haplosporella*. Since no species have been reported on the above hosts previously, detailed comparative studies were carried out, which showed that the present collections differ in several morphological features besides being reported on hitherto unreported hosts. It is there-

fore proposed to be presented as new to science on host specificity and comparative morphological studies.

At present the genus *Haplosporella* is being represented by 15 species in India. All these species have been arranged in alphabetical order.

1. *H. acaciae* sp. nov.

Pycnidia clustered in black, wart like stroma which bursts out of the bark ranging from 80—100 = 65—100 μ. Stroma often divided into 3—5 cavities, each separated by thin walled rectangular cells. Pycnidia opens irregularly at maturity. Conidiophores simple non-septate 11—15 μ long. Conidia dark, brown, one celled 15—19 = 8—11 μ. Interspersed with conidiophores are sterile threads.

Collected on dead stems of *Acacia arabica* L. Leg. ROKDE, B. G. at Aurangabad and deposited in the herbarium of Marathwada University under No. MUH 122 (Tilak type).

Haplosporella acaciae spec. nov.

Pycnidia aggregata in stroma nigrum verrucae simile protrusum ex cortice papillatum 80—100 = 65—100 μ. Stroma saepe divisum

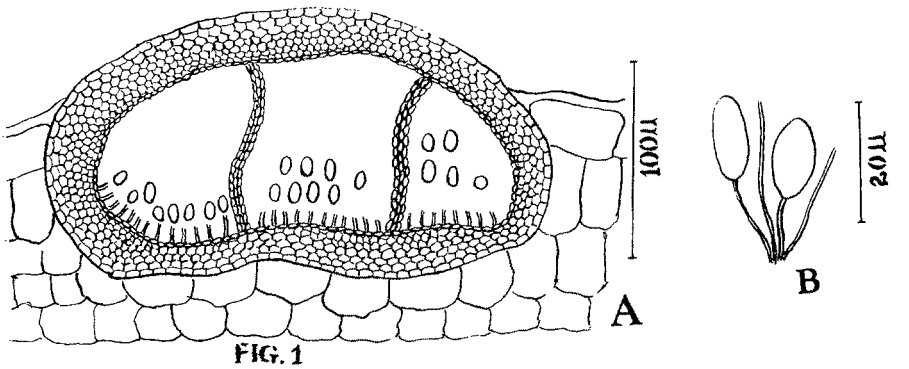

FIG. 1

Fig. 1. *Haplosporella acaciae*. A. Stroma. B. Conidia with conidiophores and sterile thread.

in cavitates 3—5, quarum aliae ab aliis cellulis graciliter parietatis separantur. Pycnidia irregulariter ad maturitatem aperiuntur. Conidiophora simplicia non septata 11—15 μ longa. Conidia ampla, fusce brunnea, unicellularia 15—19 = 8—11 μ. longa. Conidiophoris intermixta sunt filamenta sterilia.

Typus lectus in truncis emortuis *Acaciae arabicae* mensibus novembri et decembri anni 1963 a BGR et positus in herbario universitatis marathwadensis sub numero 122.

2. *H. aleuritis* AGNIHOTRUDU & WADFIELD.
J. Ind. Bot. Soc. **38**, 546—48. 1959.

Collected on dried stems of *Aleuritis montana* WILSON. Leg. AGNIHOTRUDU, Toklai Exp. Station, Assam, 5-9-1957.

3. *H. artabotricola* KALANI.
Mycopathol. et Mycol. Appl. **XXI**, 3—4, 222—224. 1963.

Collected on stems of *Artabotrys odoratissimus* BR. from Poona Leg. KALANI.

4. *H. azadirachtae* sp. nov.

Pycnidia numerous scattered throughout the stem, clustered in black stroma which bursts out of the bark releasing conidia. Stroma divided into 5—11 cavities, each being separated by thin walled rectangular cells, measuring from 520—595 = 325—423 μ. Conidiophores small, hyaline, simple and non-septate, measuring from 11—19 μ. Conidia dark brown, ovoid to oblong, one celled, measuring from 11—19 μ. Conidia dark brown, ovoid to oblong, one celled, measuring from 11—23 = 7—25 μ. Interspersed with conidiophores are sterile threads.

Collected on *Azadirachta indica* A. JUSS. Leg. RAMCHANDRA RAO and deposited in the herbarium of Marathwada University under no. MUH. 132.

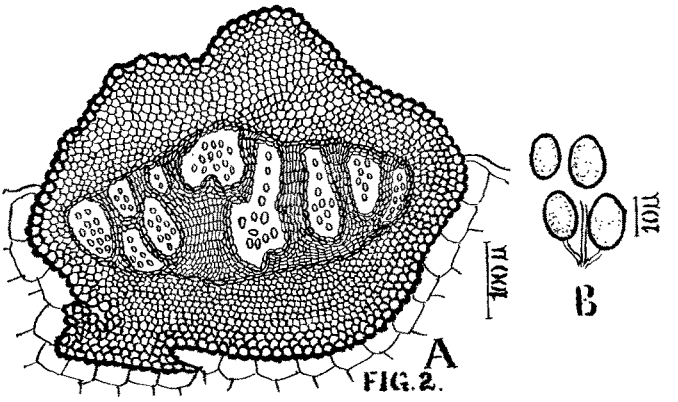

Fig. 2. *Haplosporella azadirachtae*. A. Stroma. B. Conidia with conidiophores and sterile thread.

Haplosporella azadirachtae spec. nov.

Pycnidia plura dispersa per totum caulem, aggregata in stroma nigrum, quod rumpitur ex cortice liberatque conidia. Stroma saepe in 5—11 cavitates divisum, quarum singulae separantur per parietes tenues cellularum rectangularium 520—585 = 325—423 μ. Conidiophora minuta, hyalina, simplicia, non septata, 11—19 μ.

Conidia fusce brunnea, ovoidea vel oblonga unicellularia, 11—23 = 7—15 μ. Filamenta sterilia conidiophoris intermixta.

Leg. RAMCHANDRA RAO on *Azadirachta indica* JUSS. et posuit in herbario marathwadensis universitatis sub numero MUH 132.

5. *Haplosporella celastrinum* TILAK
J. Ind. Bot. Soc. 1964 (in press)

Collected on dried stems of *Celastrus paniculata* WILLD. Leg. TILAK, S. T., Daulatabad, 14-7-1963.

6. *H. dracenarum* (PENZIG & SACC.) PETRAK.
Ann. Mycol. **31**: 62. 1935.

Collected on leaves of *Dracaena* species. Leg. SYDOW, H. & MITTER, J. H. Allahabad (U.P.), 1935.

7. *H. dryobalanopsidis* SRIVASTAVA
Sydowia **10**: 236—38. 1956.

Collected on fruits of *Dryobalanopsis aromatica* GAERTN, imported from Malaya. Leg. SRIVASTAVA 1956.

8. *H. mangiferae* (DIED.)
Feddes repertorium, Beihefte. **42**: 551, pp. Dahlem, 1926-27.

Collected on dead branches of *Mangifera indica* L. Leg. PETRAK & SYDOW (U.P.) 1926-27 and S. T. TILAK, Kannad. 1963.

9. *H. marathwadensis* sp. nov.

Pycnidia numerous scattered throughout the stem but not in clusters. Stroma bursts out of the bark releasing conidia. It is generally divided into 3—6 cavities, each being separated by thin walled rectangular cells, measuring from 260—423 = 97—358 μ. Conidiophores, hyaline, small, simple and non-septate 7—15 μ.

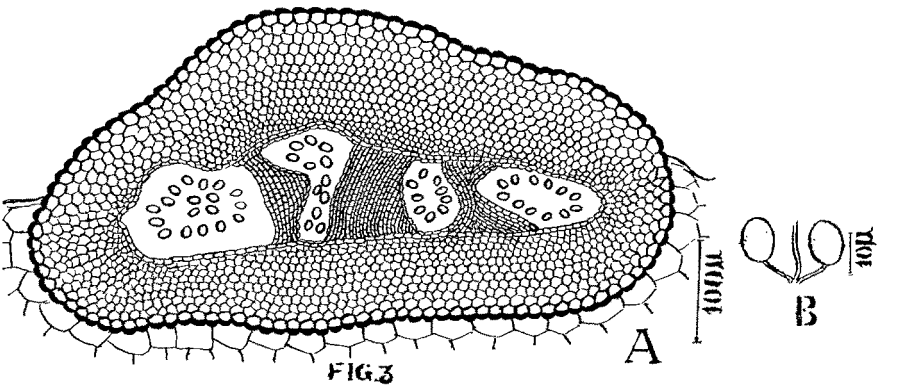

Fig. 3. *Haplosporella marathwadensis*. A. Stroma. B. Conidia with conidiophores and sterile thread.

Conidia dark brown, ovoid to oblong, measuring from 11—19= 9—18 μ. Interspersed with conidiophores are sterile threads.

Collected on dried stems of *Vinca rosea* L., *Anona squamosa* L., and *Anona reticulata* L. Leg. TILAK S. T. & RAMCHANDRA RAO, in the months of March-April, 1964 and deposited in the herbarium of Marathwada University under no. MUH 133.

9. *H. marathwadensis* sp. nov.

Pycnidia plura dispersa per totum caulem sed haud aggregata. Stroma exploditur ex cortice liberans conidia. Vulgo dividitur in cavities 3—6, quarum aliae ab aliis separantur per cellulas rectangulares tenuiter parietatas 260—423 = 97—358 μ. Conidiophora hyalina, minuta, simplicia et non-septata 7—15 μ. Conidia fusce brunnea, ovoidea vel oblonga, 11—19 = 9—18 μ. Filamenta sterilia conidiophoris intermixta.

In culmis emortuis *Vincae roseae* L., *Anonae squamosae* L., et *A. reticulatae* L., Leg. S. T. TILAK & RAMCHANDRA RAO, mensibus martio et aprili anni 1964; posuit in herbario marathwadensis universitatis sub numero MUH. 133.

Comparative table of H. marathwadensis on different hosts.

Host	Pycnidia	Conidia
Vinca rosea	292—357=97—150 μ	11—19=9—18 μ
Anona squamosa	260—358=162—228 μ	11—19=11—15 μ
Anona reticulata	357—423=247—358 μ	15—19=11—13 μ

Since all these are more or less similar in morphological features, they are considered as the same. However they constitute new hosts for the species.

10. *H. phyllanthina* SYDOW
Ann. Mycol. **35**: 235—1937

Collected on dead stems of *Phyllanthus reticulatus* POIR. Leg. SYDOW & MITTER, Allahabad (U.P.) 1937.

11. *H. nericola* KALANI
Curr. Sci. **30**: 312—13. 1961.

Collected on the leaves of *Nerium odorium* SOL. Leg. KALANI. The species has been reported on dead leaves of *Nerium odorum* SOL. However we have also collected it on stems of the same in the month of July 1964 at Aurangabad.

12. *H. pandanicola* A. K. ROY.
Curr. Sci. 442—43. 1964.

Collected on the leaves of *Pandanus minor* P. HENN. Leg. A. K. ROY on 21-6-1963, Borheta, Assam.

13. *H. salmaliae* sp. nov.

Pycnidia numerous and scattered on the surface of the branches. Stroma bursts out of the bark releasing conidia. It is generally divided into 3—5 cavities, each is separated by a wall of thin walled rectangular cells, measuring from 390—520 = 195—377 μ. Conidiophores small, simple, hyaline and non-septate, conidia dark brown, ovoid to oblong, measuring from 15—23 = 7—15 μ. Interspersed with conidia are sterile threads.

Collected on dried stems of *Salmalia malabarica* SCHOTT & ENDL. Leg. TILAK, S. T. in the months of March and April, 1963 and deposited in the herbarium of Marathwada University under MUH 134.

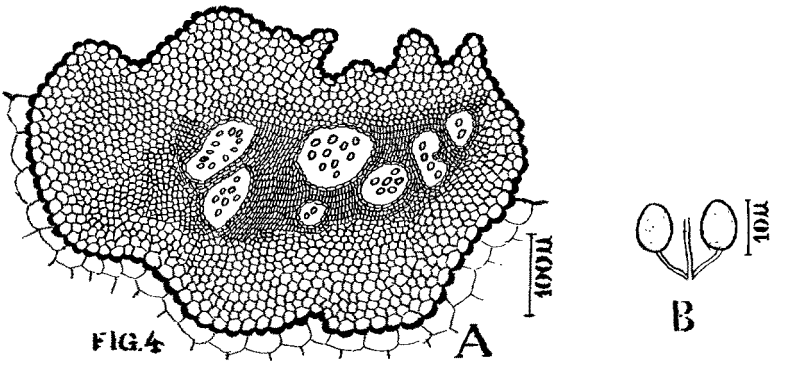

FIG. 4

Fig. 4. *Haplosporella salmaliae*. A. Stroma. B. Conidia with conidiophores and sterile thread.

H. salmaliae spec. nov.

Pycnidia plura, dispersa per superficiem ramorum. Stroma exploditur ex cortice et liberat conidia. Vulgo dividitur in cavitates 3—5, quarum aliae ab aliis separantur per parietes cellularum rectangularium parietibus tenuibus praeditarum 390—520 = 195—337 μ. Conidiophora minuta simplicia hyalina et non-septata. Conidia fusce brunnea, ovoidea vel oblonga, 15—23 = 7—15 μ. Filamenta sterilia conidiis intermixta.

Leg. S. T. TILAK in stipite emortuo *Salmaliae malabaricae* mensibus aprili et martio anni 1963 et posuit in herbario universitatis marathwadensis sub numero MUH 134.

14. *H. stephanotidis* KALANI
Mycopathol. et Mycol. Appl. **XXI**, 3—4, 222—224, 1963.

Collected on the culms of *Stephanotidis floribunda* BR. from Poona Leg. KALANI.

15. *H.* sp. TILAK
Mycopathol. et Mycol. Appl. **XIII**, 2, 100—106. 1960.

Collected on dead stems of *Duranta plumieri* JACQ. Leg. TILAK, Poona, 1960 and RAO, Aurangabad in 1963.

16. *H.* sp. SINGH U.B.
I.C.A.R. Misc. Bull. **51**: 4 & 10. 1943.

Collected on *Pyrus malus* L and *Pyrus communis*. Leg. SINGH, U.B., Someswar (U.P.) and Chaubhattia (U.P.), 1943.

The detailed investigations carried out with the fresh collections and the type material definitely suggest that the fungus is saprophytic in habit and only few species are probably parasitic. All the Indian species reported, are saprophytic and this leads to suggest the predominant saprophytic nature of the fungus. With the exception of *H. dryobalanopsidis* and *H. nericola, H. pandanicola* which have been reported on fruits and leaves respectively, rest of the Indian species have been reported on stems only.

The authors are in general agreement with the erection of the Petrakian sub-genus to the generic level, *Haplosporella* of DIEDICKE and the present investigations definitely suggest that *Pleosphaeropsis* stands distinct by itself in having mucous spores which do not occur in any collections of the genus *Haplosporella*. The presence of sterile threads is more or less a uniform feature of the genus and this character shows its resemblance to the Saccardian genus "*Sphaeropsis*". However it should not be accepted as a genus of Deuteromycetes since the name is already accepted as the valid name of ascomyceteous genus.

Majority of the collections were made during the dry months and this possibly suggests that the cracking of the barks in summer helps to spread the fungus. Further investigations as regards the mode of infection, germination and development of pycnidia are in progress and will be presented in due course.

Acknowledgement

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* Originals are not seen.