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Fungi of Gorakhpur. XVII. *Sarcinella*.

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Introduction

The Gorakhpur region consitutes a major part of the Terai-belt in Uttar Pradesh, India. This region experiences an humid sub, tropical climate and is adorned with rich phanerogamic flora.

As a result of the long term mycological survey of this region, the authors have collected a large number of interesting plant parasitic fungi some of which have been reported and described recently (KAMAL et al., 1977, 1978; KAMAL & SINGH, 1978; SINGH & KAMAL, 1978).

This paper, however, describes and illustrates three new species of *Sarcinella* viz., *S. colebrookiae* sp. nov. (on *Colebrookia oppositifolia* SMITH), *S. glycosmidis* sp. nov. (on *Glycosmis pentaphylla* CORREA), and *S. gorakhpurensis* sp. nov. (on *Diospyros melanoxylon* ROXB.).

Descriptions

Sarcinella colebrookiae KAMAL & SINGH sp. nov. — Fig. 1

Coloniae amphigenae, plerumque epiphyllae, effusae, densae, atrae, irregulares, partem majorem folii tegentes, demum coalescentes; mycelium superficiale, pallide brunneum, ex hyphis reticulatis crassitunicatis ad latera vel rare opposite ramosis, e cellulis usque 21.5 (plerumque 10—14.5) × 4.5— μm, compositum; hyphopodia plerumque unilateralia, hemisphaerica, interdum subglobosa, pallide brunnea, 7—9 μm diam., conidiophora micronemata, parva e ramosa, recta, rare flexuosa, pallide brunnea, ex hyphis plerumque ad latera enata, glabrotunicata, ad apicem leniter pallidiora, crassa; cellulae conidiogenae monoblasticae, integratae, terminales, determinatae, cylindricae; conidia solitaria, acrogena, subsphaerica, glabra, atrobrunnea, muriformia, ad septa valde constricta (sarciniformes), septis plerumque cruciatim ordinatis; in aspectu superficiali usque 11-lobata, 30—50 μm diam. Hab. in foliis vivis Colebrookiae oppositifoliae SMITH (Labiatae) Gorakhpur, India; Aug.—Sept. 1976; leg. R. P. SINGH, 205; IMI 210842 (Typus).

Colonies amphigenous, usually epiphyllous, effuse, dense, black, irregularly growing and usually covering most of the leaf surface, coalescing with age; mycelium superficial, light brown, composed of a network of laterally to rarely oppositely branched, septate, thick walled mycelium containing up to 21.5 μm long (usually 10—14.5 μm long) and 4.5—7 μm wide cells; hyphopodia mostly

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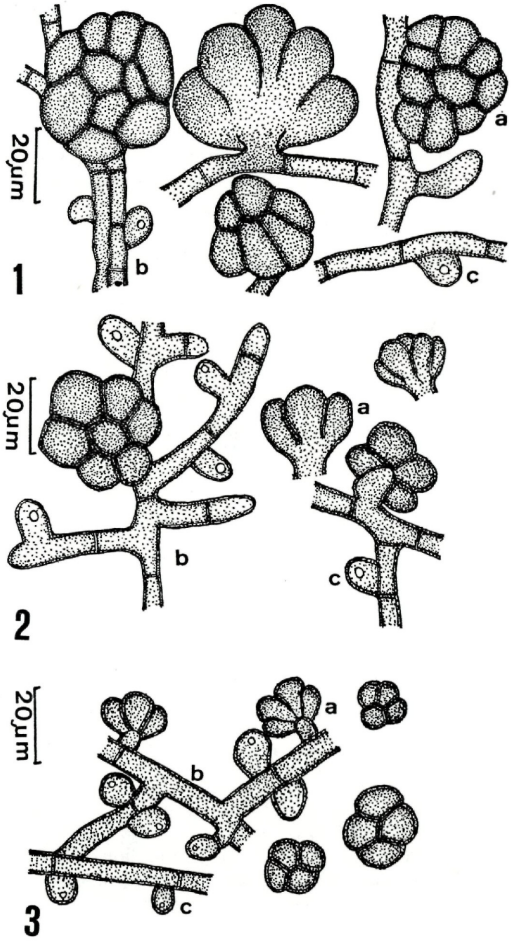

Fig. 1. *Sarcinella colebrookiae* KAMAL & SINGH (type). a. conidia. — b. branched hyphae. — c. hyphopodium

Fig. 2. *Sarcinella glycosmidis* KAMAL & SINGH (type). a. conidia. — b. hyphae. — c. hyphopodium

Fig. 3. *Sarcinella gorakhpurensis* KAMAL & SINGH (type). a. conidia. — b. hyphae. — c. hyphopodium

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unilateral, hemispherical, sometimes subglobose, light brown, 7—9 μm in diam.; conidiophores micronematous, small, unbranched, straight, rarely flexuous, light brown, arising usually laterally on the hyphae, simple, smooth walled, slightly paler and 7—9 μm thick towards the apex; conidiogenous cells monoblastic, integrated, terminal, determinate, cylindrical; conidia solitary, acrogenous, subspherical, smooth, dark brown, muriform, strongly constricted at the septa (sarciniform), septa usually cruciately arranged, appearing up to 11-lobed in surface view, 30—50 μm in diam.

On living leaves of *Colebrookia oppositifolia* SMITH (Labiatae); Gorakhpur; Aug.—Sept., 1976; leg. R. P. SINGH, 205; IMI 210836 (holotype).

This fungus does not resemble any *Sarcinella* species described so far (UPPAL & al., 1935; SYDOW & al., 1937; SAHNI, 1964, 1966; KRANZ, 1968; PAVGI & SINGH, 1970; ELLIS, 1971) in its morphological characters. However, this species is peculiar in having multilobate (up to 11 lobes in surface view) and larger conidia as compared to other species. Moreover, no species of *Sarcinella* has been reported on *Colebrookia* species; the present isolate, therefore, is described as a new species.

Sarcinella glycosmidis KAMAL & SINGH sp. nov. — Fig. 2.

Coloniae amphigenae, plerumque epiphyllae, pallide brunneae vel atrae, subdensae vel densae, parvae, dispersae, separatae, interdum per laminam totam atropunctatae; mycelium superficiale ex hyphis retiformibus, septatis, pallide brunneis, crassitunicatis, plerumque opposite vel irregulariter ramosis, cellulae 4.5—8 μm continentibus constitutum; hyphopodia alternata vel unilaterales, hemisphaerica interdum subglobosa, pallide brunnea 7—9 μm diam.; conidiophora micronematica, parva eramosa, recta vel rare flexuosa, pallide brunnea ex hyphis plerumque ad latera enata, simplicia, glabrotunicata, ad apicem leniter pallidiora, 5—7.5 μm lata; cellulae conidiogenae monoblasticae, integratae, terminalia, determinatae, cylindricae; conidia solitaria, acrogena, subsphaerica, glabra, atrobrunnea, muriformia, ad septa profunde constricta (sarciniformes), septis plerumque cruciatim ordinatis, in aspectu superficiali plerumque 4—7 lobata, 20—33.5 μm diam. Hab. in foliis vivis *Glycosmidis pentaphyllae* CORREA (Rutaceae), Gorakhpur, India; Sept.—Oct. 1976; leg. R. P. SINGH 267; IMI 212573 (Typus).

Colonies amphigenous, mostly epiphyllous, light brown to black, subdense to dense, small, scattered, separate, sometimes present almost on the entire leaf blade and appearing as black spots; mycelium superficial, composed of a network of branched, septate, light brown, thick walled hyphae which are branched usually oppositely and occassionally irregularly and contain cells measuring 4.5—8 μm in width; hyphopodia alternate or unilateral, hemispherical, occassionally subglobose, light brown, 7—9 μm in diam; conidiophores micronematous, small, unbranched, straight, rarely flexuous, light brown, arising usually laterally on the hyphae, simple, smooth walled,

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slightly paler towards the apex, 5—7.5 μm thick; conidiogenous cells monoblastic, terminal, determinate, cylindrical; conidia solitary, acrogenous, sub-spherical, smooth, dark brown, muriform, deeply constricted at the septa (sarciniform), septa usually cruciately arranged, appearing usually 4—7 lobate in surface view, 20—33.5 μm in diam.

On living leaves of *Glycosmis pentaphylla* CORREA (Rutaceae); Gorakhpur, India; Sept.—Oct. 1976; leg. R. P. SINGH, 267; IMI 212573 (holotype).

This fungus is not similar to any known species of *Sarcinella* (UPPAL & al., 1935; SYDOW & al., 1937; SAHNI, 1964, 1966; KRANZ, 1968; PAVGI & SINGH, 1970; ELLIS, 1971). It is peculiar in having comparatively small but multilobate conidia (usually 4—7 lobate in surface view). Further, no species of *Sarcinella* has ever been described on *Glycosmis*. The present fungus, therefore, merits description as a new species.

Sarcinella gorakhpurensis KAMAL & SINGH sp. nov. — Fig. 3

Coloniae amphigenae, plerumque epiphyllae, effusae, pallide brunneae vel brunneae, circulares vel irregulares, parvae, separatae, dispersae; mycelium superficiale, ex hyphis raticormibus, anastomosantibus, septatis, pallide brunneis, crassitunicatis, opposite vel irregulariter ramosis, 5.5—8 μm diam. constitutum; hyphopodia saepe hemisphaerica interdum subglobosa, plerumque unilateralia aliquando alternata, pallide brunneae, 5.5—10 μm diam.; conidiophora parva, micronematica, recta vel flexuosa, eramosa, pallide brunnea, ex hyphis plerumque ad latera enascentia, glabra, apicem versus leniter pallidiora, 5—7 μm crassa; cellulae conidiogenae monoblasticae, integratae, terminales, cylindricae; conidia solitaria, acrogena, arida, subsphaerica, brunnea, muriformia, glabra, ad septa constricta, septis cruciatim ordinatis in aspectu superficiali 4-lobata, 8.5—22.5 μm diam. Hab. in foliis vivis *Diospyri melanoxylonis* ROXB. (Ebenaceae); Gorakhpur, India; Aug.—Sept. 1976; leg. R. P. SINGH 211 IMI 210842 (Typus).

Colonies amphigenous, usually epiphyllous, effuse, light brown to brown, circular to irregular, small, separate, scattered; mycelium superficial, composed of a thick network of anastomosing, septate, light brown, thick walled, and oppositely to irregularly branched hyphae which are 5.5—8 μm in diam.; hyphopodia often hemispherical, sometimes subglobose, mostly unilateral, occasionally alternate, light brown, 5.5—10 μm in diam. conidiophores small, micronematous, straight to flexuous, unbranched, light brown, arising usually laterally on the hyphae, smooth, slightly paler towards the apex, 5—7 μm thick; conidiogenous cells monoblastic, integrated, terminal, determinate, cylindrical; conidia solitary, acrogenous, dry, subspherical, brown, muriform, smooth, constricted at the septa, septa cruciately arranged, appearing usually tetralobate in surface view, 8.5—22.5 μm in diam.

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On living leaves of *Diospyros melanoxylon* ROXB. (Ebenaceae); India, Madhaulia Range, Gorakhpur Forest Division; Aug.—Sept. 1976; leg. R. P. SINGH, 211; IMI 210842 (holotype).

The present fungus disagrees with *Sarcinella cassiae* BUTLER (UPPAL & al., 1935), *S. creophila* SYD. (SYDOW & al., 1937), *S. fumosa* SAHNI, *S. odinae* SAHNI, *S. palawarensis* SAHNI (SAHNI, 1964; 1966), *S. malinensis* (SACC.) KRANZ (KRANZ, 1968) and *S. prunicola* PAVGI & SINGH (1970) in its morphological features but falls close to the *Sarcinella* state of *Schiffnerula pulchra* (SACC.) PETRAK (ELLIS, 1971). It resembles the latter in having usually tetralobate conidia, made of branching hyphae, and colour but varies in having slightly thinner hyphae and conidiophores (5—7.25 as against 4—8 μm), thin hyphopodia (7 as against 5—10 μm) and smaller conidia (10.5—22 × 14—15 as against 20—25 × 16—24 μm). Dr. A. SIVANESAN (Commonwealth Mycological Institute, Kew, England) also found it undescribed. Since no species of *Sarcinella* has so far been recorded on *Diospyros* species, the present fungus deserves description as a new species.

Acknowledgements

The Authors wish to record their sincere thanks to the Director, C. M. I., Kew, England for confirming the identity of the species described and to Prof. K. S. BHARGAVA, (Head, Department of Botany and Pro-Vice Chancellor, University of Gorakhpur) for providing facilities.

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: Sydowia

Jahr/Year: 1980

Band/Volume: 33

Autor(en)/Author(s): Kamal Shwet, Singh R. P.

Artikel/Article: Fungi of Gorakhpur. XVII. Sarcinella. 152-156