

SPORORIMELLA HEXAMERA SP. NOV. FROM TURKHAM, PAKISTAN

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The taxonomy and nomenclature of the genus *Sporormiella* has been discussed and a new species, *Sporormiella hexamera* from Turkham, Pakistan, has been proposed. Latin diagnosis and detailed English description for the said species have been given. In addition, *camera lucida* drawings of the perithecium, asci, ascospores as well as photomicrographs of asci and ascospores have been provided.

INTRODUCTION

During our investigations on coprophilous fungi, a species of *Sporormiella* was collected on goat dung from Turkham, Pakistan. This species has not been described before, and it is therefore proposed here as *Sporormiella hexamera* sp. nov. Before describing this new species, an introduction to the nomenclature and taxonomy seems necessary.

(1) Genus *Sporormia* was established by De Notaris [1] with a single species, *S. fimetaria*, considered as the type. Subsequently new species were added to this genus by Auerswald [2], Niesal [3], Griffiths [4], Cain [5] and others, which invariably differed from type *S. fimetaria* [5] in certain important characters, e.g. (i) in the presence of distinct perithecial neck; (ii) spores not being arranged in the form of a truncate bundle and having individual gelatinous sheath instead of a common one; and (iii) the presence of germ slits in the ascospores.

(2) Kirschtein [6] created a new genus *Brochospora* with *S. fimetaria* as the type species. Since *S. fimetaria* is the type of the genus *Sporormia* De Not., this arrangement is not feasible as per international Code of Botanical Nomenclature. It is therefore not possible to change the position of *S. fimetaria* in any way and the consideration of *Sporormia minima* Auersw. as the type species of the genus *Sporormia* by Clements and Shear [7] and Moreau [8] has also not considered possible.

(3) In accordance to Kirschtein's [6] original proposal of dividing *Sporormia* into two genera, Breton & Faurel [9] erected a new genus *Sporormiopsis* with *S. minima* Auersw. as the type and suggested that the genus *Sporormia* be restricted to *S. fimetaria* and *S. mirabilis* Breton & Faurel.

(4) Ahmed & Asad [10] restricted the genus *Sporormia* to the above two species with the addition of a new species, *S. fimicola* Ahmed & Asad. They argued and recommended the transfer of the remaining species to the genus *Sporormiella* Ell. & Ev. [11]. Ahmed & Cain [12] finally transferred 37 species from the genus *Sporormia* to *Sporormiella* and added 22 new species.

(5) Cain [13] agrees that *Preussia* is similar to the segregates of *Sporormia* but could be distinguished from the latter by the lack of ostiole, the more superficial position of the ascocarp, and the broader, non-dehiscent asci. Although he recognized the affinity between *Preussia* and *Sporormia* yet this treatment of *Preussia* [13] and of *Sporormia* [12] separately do indicate that *Preussia* is distinct from *Sporormia* on the generic level. However, Sultan Ahmed [14] has treated all the segregates of *Sporormia* under the genus *Preussia* but has not provided any justification for his classification.

On the basis of the above information as well as the studies made on the type species of *Sporormiella* (*Sporormiella nigropurpurea* Ell. & Ev.) by Masee & Salmon [15], Cain [5], Ainsworth [16], Ahmed & Asad [10], Ahmed & Cain [12]. the presence of stroma on the surface of the dung, a character on which the genus is based, was not observed. Since there was no other character is *Sporormiella purpurea* Ell. & Ev. (type of *Sporormiella*) by which it could be differentiated from the segregates of *Sporormia*, the transfer of these segregates under an old genus *Sporormiella* has been considered fully justified under the rules.

MATERIALS AND METHODS

The dung material was placed in moist chambers as described by Ahmed & Asad [17]. Asci and ascospore

measurements were taken in water. The length of the asci included the stipe and the spore bearing part. The stipe was measured separately. The width of the asci and ascospores was taken at the broadest part. The measurement of the ascospores does not include the gelatinous sheath.

The hyaline gelatinous sheaths which were difficult to see in water mounts were stained in aqueous cotton-blue. The terminology used for germ slits is based on the examination of ascospores in surface view as done by Ahmed & Cain [12].

RESULTS

As per our treatment, the generic description of *Sporormiella* is as follows:

Coprophilic, perithecia immersed to semi-immersed, scattered to aggregated in small groups, membranous to coriaceous, dark brown to black, smooth or covered with hairs in the upper part, neck varying from short papillate to long cylindrical. Asci 8-spored, bitunicate, cylindrical to clavate with short to relatively long stipe. Ascospores three to many septate, at first hyaline, finally becoming dark brown; septa transverse to oblique; germ slit elongated, parallel to diagonal, or transverse to the longitudinal axis of ascospore, gelatinous sheath hyaline, surrounding each ascospore.

Holotype: *Sporormiella nigropurpurea* Ell. & Ev. North American Pyrenomycetes. p. 136, 1892. *Sporormiopsis* Bret. & Faur., Bull. Trim. Soc. Mycol. Fr. 80: 257, 1864.

Sporormiella hexamera sp. nov. (Fig. 1-2).

Latin Diagnosis: Peritheciis sparsis, immersis, erumpentibus, globosis usque sub-globosis, 135-175 x 100-140 μ , nigris, denudatis, collo brevi, conico, lato, nigro, denudato. Peridio tenui, membranaceo. Ascis octosporis, clavatis,

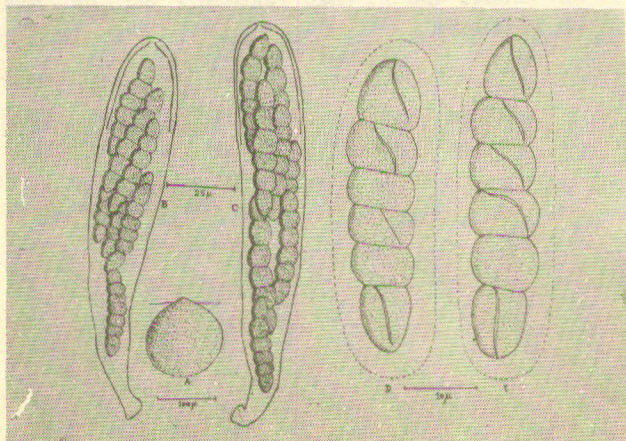


Fig. 1. *Sporormiella hexamera* sp. nov. A. perithegium, B. asci and C. ascospores.



Fig. 2. *Sporormiella hexamera* sp. nov. photomicrograph showing asci and ascospores.

120-150 x 15-20 μ , superne late rotundatis, inferne attenuatis, breve stipitatis. Ascosporis superne 2-seriatis, inferne 1-seriatis, 6-cellularibus, cylindraceo-clavatis, 40-50 x 8.5-10.5 μ utrinque rotundatis, articulo secundo majore, 6.0-8.0 x 8.5-10.5 μ , ad septa profunde constrictis, facile secedentibus; stria germinationis oblique usque diagonalis.

Holotype On goat dung, Turkham (hillocks on the right side of the gate between Pak-Afghan Border), Pakistan. Collected by Dr. Mahmood Akram Naz on 20.7.1984, PCSIR Herbarium No. 423.

Perithecia globose to sub-globose, scattered, embedded up to the neck, neck very slightly projecting above the substratum, 135-175 x 100-140 μ , perithecia firmly embedded in the substratum through dense mycelium. Neck very small and broad, conical. Peridium hyaline in the beginning, becoming brown to finally black, membranous.

Asci 8-spored, clavate, 120-150 x 15-20 μ , broadly rounded above, broadest between the middle and upper end, gradually contracted below into a small, stout, rather persistent stipe, 10-15 μ in length. Paraphyses abundant, filiform, septate, branched, slightly longer and mixed with the asci, 1.0-1.5 μ in diameter.

Ascospores bi-seriate above, uni-seriate below, 6-celled, cylindrical-clavate, 40-50 x 8.5-10.5 μ , rounded at both the ends, hyaline at first, ranging through yellow to dark brown and opaque when mature, septa transverse, constrictions at the septa deep, segments separable; ascospore narrowing at both the ends, broadest towards the middle, the 2nd cell from the upper end broadest, the end cells longer than the remaining cells. The measurements of the cells starting from the upper end are: 1st cell - 8.5-10.5 x 7.5-8.5 μ ; 2nd cell - 6.0-8.0 x 8.5-10 μ ; 3rd cell - 5.5-6.5 x 8.5-9.0 μ ; 4th cell - 5.0-7.5 x 8.0-8.5 μ ; 5th cell - 5.0-7.5 x 7.0-7.5 μ ; 6th cell - 8.0-10.5 x 6.0-6.5 μ , gelatinous sheath hyaline, narrow. Germ slit oblique to diagonal.

DISCUSSION

The genus *Sporormiella* embraces as large a number of species as sixty. Although the majority of the species are 4-celled, however, they range upto 16-celled ascospores, as in the case of *sp. herculea* (Ell. & Ev.) Ahmed & Cain. *Sporormiella pentamera* (Oud.) Ahmed & Cain is the only species with 5-celled ascospores, and no 6-celled species have ever been recorded, whereas there exist a number of 7-celled species: *sp. americana* (Griff.) Ahmed & Cain, *sp. heptamera* (Auersw.) Ahmed & Cain, *sp. septenaria* Ahmed & Cain, *sp. trogospora* Ahmed & Cain and *sp. vexans* (Auersw.) Ahmed & Cain. Our report on the 6-celled species (*Sporormiella hexamera* sp. nov.) seems important in the sense that it bridges the gap between the species with 5-celled and 7-celled ascospores. It would also be interesting to note that in all the above mentioned 7-celled species of *Sporormiella*, the third cell of the ascospore from the upper end is invariably large, whereas, in the case of 5-celled species (*sp. pentamera*) and 6-celled (*sp. hexamera* sp. nov.), the second cell from the upper end is the largest. *sp. pentamera* and *sp. hexamera*, therefore, seem close to each other with respect to the position of larger cell in the ascospore. It would equally be important to note that the perithecium of *sp. hexamera* sp. nov. is more or less subglobose rather than flask-shaped, deeply embedded, with a very small papillate neck. These characters perhaps indicate some affinities towards the species of *Sporormia*, which always possess immersed, subglobose perithecia and totally lack the presence of a neck.

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