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COLEOCHAETE CONCHATA MOEBIUS (CHLOROPHYTA): A NEW RECORD FROM INDIA

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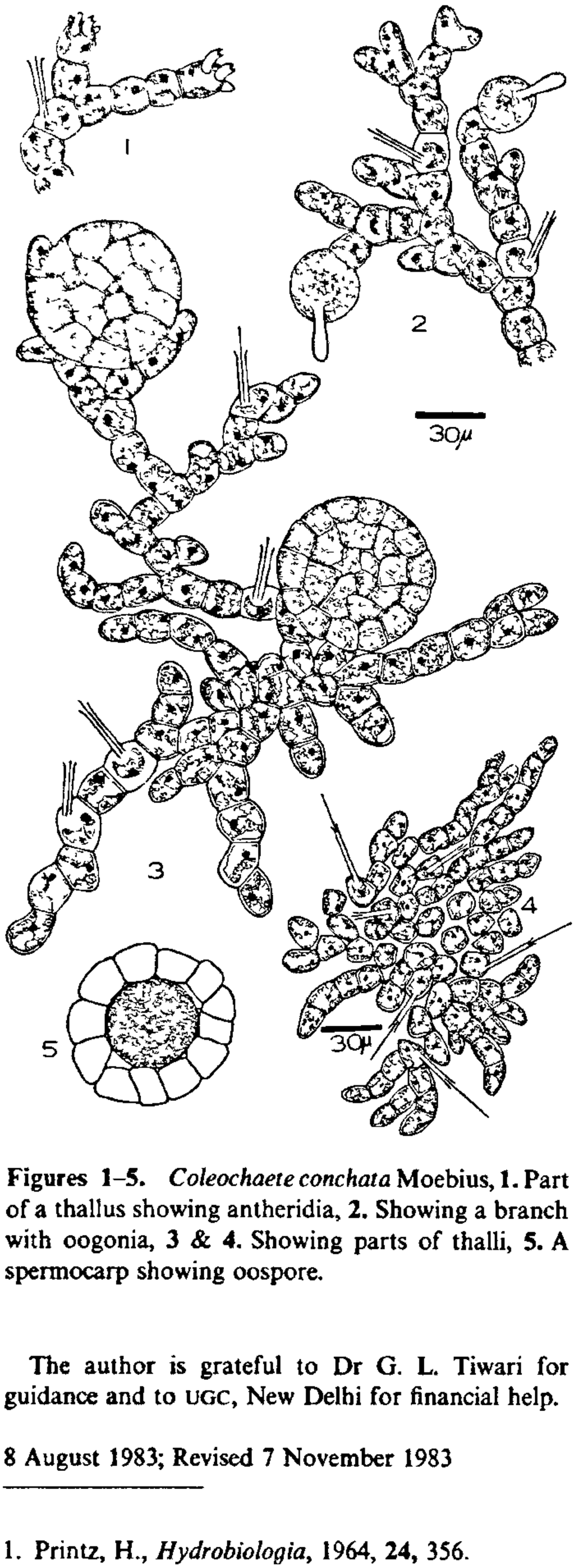
THE genus *Coleochaete* Breb. is known to have eleven species[1] of which only six species[2,3] are reported from India. While exploring the epiphytic chaetophoralean algae of Allahabad and its adjoining districts, the author found an additional species *viz C. conchata* Moebius (figure 4) which has not been reported earlier from India. The alga was collected from the village Mori in Pratapgarh district during January 1983. The alga was found growing epiphytically on decaying stems of aquatic angiosperms. Attempts to procure it in culture could not succeed. Since the alga had most of the reproductive stages, it was preserved in 4% formalin solution for further study.

Thalli are formed of irregular gelatinous cushions of about 2–3 mm in diameter. The filaments do not look radiating from a common centre but due to crowding of filaments in central part of the thallus, it becomes pseudoparenchymatous (figure 4) in appearance. However, peripheral branches are not densely arranged and therefore have broad interspaces among themselves. Cells are oblong or barrel-shaped and distinctly constricted at the cross-walls. Cells are uninucleated and each has a parietal curved plate of chloroplast with a distinct pyrenoid. Cells measure 10–15 μm in diameter, 15–20 μm in length. Setae have conspicuous length (up to 30 μm) of their basal coat of sheath and the tips of which have divergent rim. A delicate, cytoplasmic prolonged hair is produced from each sheath. The antheridia (figure 1) are papillate, occur in groups of three or four, on terminal cells of branches. In most of the cases they were found empty. Antheridia are 3–8 μm long and 2–4 μm broad. Oogonia (figure 2) are modified terminal cells of the branches. Each oogonium has a globose to subglobose basal portion and an elongated cylindrical trichogyne with a truncated end. Oogonia are 22–30 μm in diameter and length of the trichogyne may be 20–25 μm. Oospores (figure 5) are 30–40 μm in diameter. Spermocarps (figure 3) look rounded in surface or front view and lenticular in end view. The covering cells of spermocarp are contributed by several branches present in the vicinity of oospore. A spermocarp may have a peripheral ring of generally 10 to 15 cells. The spermocarps are 60–70 μm in diameter. The present alga resembles the type description of *C. conchata* Moebius in having similar thallus, pseudoparenchymatous central part, setae having significant length of sheath. However, it has smaller dimensions of antheridia, oogonia and spermocarps. In the type description shape of cells is said to be roundish but it is not corroborated in figures of *Moebius* as given in Printz[1]. The present alga could also be compared with its allied species *viz C. soluta* Pringsheim and *C. pseudosoluta* Gauthier-Liever, but both species have cylindrical cells and not distinctly constricted cross walls and therefore the author is inclined to identify the alga as *C. conchata* and rely more on the thallus structure and conspicuous sheath of setae. It may be pointed out that the cell shape of the present alga does resemble to what delineated for *C. conchata* in Moebius figure.



Figures 1–5. *Coleochaete conchata* Moebius, **1.** Part of a thallus showing antheridia, **2.** Showing a branch with oogonia, **3 & 4.** Showing parts of thalli, **5.** A spermocarp showing oospore.

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LIGNIN DEGRADATION BY AN EDIBLE MUSHROOM, *PLEUROTUS SAJOR-CAJU*

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FRUIT bodies of *Pleurotus sajor-caju*, an edible white rot fungus, are an excellent source of protein rich human diet. *P. sajor-caju* grows efficiently on the untreated lignocellulosic substrates such as rice straw, wheat straw, banana leaves etc and yields as high as 1 kg fresh fruit bodies per kg dry substrate in about 40 days after spawning. As a result of mushroom growth, the substrates become enriched in nitrogen (and protein) contents. The spent substrates left after the mushroom growth could be an excellent source of protein-rich animal feed if their lignin contents are also reduced as lignin remains unutilized by ruman microflora. Further, the cellulose and hemicellulose present in spent substrates can be digested more easily by ruminants if the lignin, which usually sourrounds the cellulose fibres, is absent or present in very low amounts. *Pleurotus* species such as 'Florida' and *P. cornucopiae* have been shown to degrade lignin of different plant substrates during solid state cultivation[1]. The lignin degrading capacity of *P. sajor-caju* has not been reported yet.

In the present investigation, lignin degradation by *P. sajor-caju* was identified by the oxidase test on the agar plates[2]. A small piece of mycelial growth of *P. sajor-caju* from a malt agar slant was transferred to Czepak Dox agar medium in which the carbon source was replaced by 1% lignin. After the growth of the fungus for 5 days about 2 cm of radial growth zone appeared on the agar plates. On treatment of the agar plates with guaiacol solution a red zone appeared around the growth zone which confirmed the presence of phenol oxidase enzyme and of lignin degradation (figure 1).

Packed beds of 400 g rice straw were inoculated with wheat spawn of *P. sajor-caju* as described by Pal and Thapa[3]. The solid state cultivation of mushroom was continued under non-sterile conditions at 15–25°C at a relative humidity of 90–95%, for 40 days during which