

## ***Scoliolegnia centrica* sp. nov. – A new watermold from India**

R. D. KHULBE

Department of Botany, Kumaun University, Naini Tal, India

Summary. – *Scoliolegnia centrica* sp. nov. is characterized by abundant gemmae, oogonia with mostly androgynous antheridia and a single, centric oospore. The species was collected from damp soils in oak forest and pea fields (Kumaun Himalaya, Nainital, India).

### **Introduction**

Taxonomic studies of Indian watermolds from various water habitats were made by different investigators including BHARGAVA & SRIVASTAVA (1966), SRIVASTAVA (1967), DAYAL & THAKURJI (1968), KHULBE (1981 a, b) and MER & al. (1980), but there is still little knowledge about these fungi in Indian soils. (KHULBE & SATI, 1979; SATI & KHULBE, 1980).

### **Description**

(The characters are described from pure cultures growing on sterilized hemp seed halves in sterile water at room temperatures ranging from 15–22° C)

*Scoliolegnia centrica* sp. nov. – Pl. 1, figs. 1–6

Hyphae vegetativae delicatae, flaccidae, flexuosae et ramosae. Zoosporangia elongata, interdum curvata, cylindrica vel longe clavata; zoosporangia secundaria vulgo efformata per ramificationem cymosam sub sporangiis maturioribus, raro interna, emissa ex orificio zoosporangium (per porum ex papilla longa), zoosporae diplanatae. Gemmae plures, variabiliter formatae. Oogonia plures stipitibus gracilibus brevibus longisve insidentia, lateralia, raro intercalaria, 30–50  $\mu$  in diametrum, tunica irregulariter papillosa, papillae plerumque 2–9 in numero, 25–28  $\mu$  longae et 5–7  $\mu$  crassae, 50–80% oogonia papillosa, omnia levia. Antheridia 50–80% presentes, androgyna vel semihypogyna, unistipitata. Oosporae singulares, raro binae, apertoticae, 20–30  $\mu$  in diametrum, centrales. Typus CMI, 262824.

Vegetative hyphae delicate, flaccid, flexuous and branched. – Zoosporangia elongate, abundant even in old culture, occasionally curved, cylindrical, long clavate; secondary sporangia usually formed by cymose branching below older one, rarely internal proliferation. – Zoospores diplanetic, leaving zoosporangium through small pore or long papilla. – Gemmae abundant, various in shape, behave as zoosporangia. – Oogonia abundant, borne on

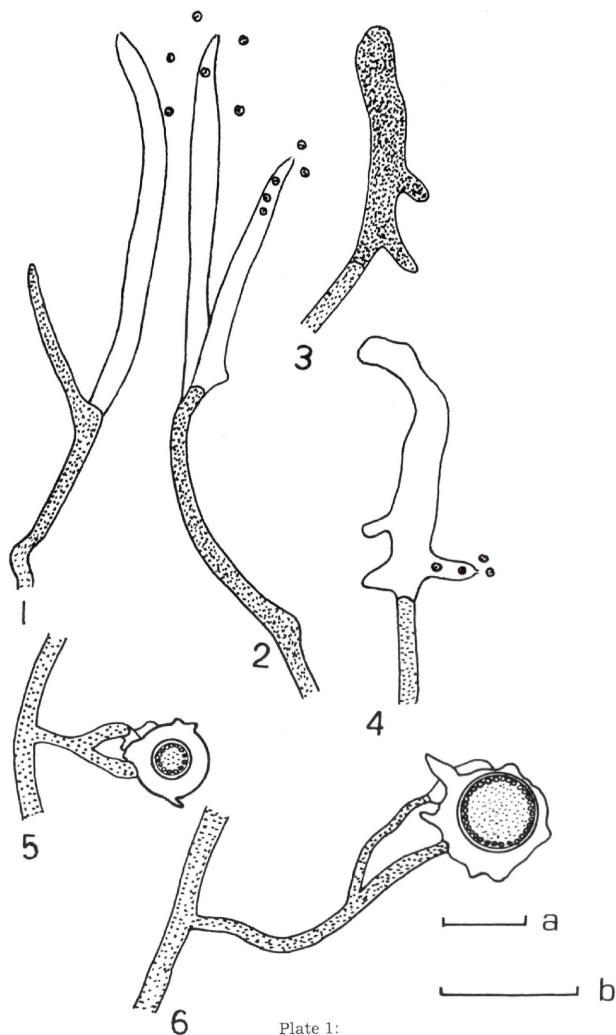


Plate 1:

Figs. 1-6: Camera lucida drawings of *Scoliolegnia centrica*: 1. Filament showing one empty zoosporangium and lateral hypha. - 2. Zoosporangia with liberation of zoospores. - 3. Young gemma. - 4. Gemma releasing zoospores. - 5-6. Mature papillate oogonia with androgynous antheridia and centric oospores.

Figs. 1-5: scale a (bar = 75  $\mu\text{m}$ ). - Fig. 6: scale b (bar =  $\mu\text{m}$ ).

slender stalks of variable length, lateral, very rarely intercalary, 30–60  $\mu$  in diameter; wall irregularly papillate, papillae many 50–80% mostly 2–9 in number, 5–28  $\mu$  long and 5–7  $\mu$  thick, pits absent, present only at the antheridial contact. – Antheridia present on 50–80% oogonia, androgynous or semihypogynous; antheridial branch arising singly. – Oospore single, very rarely two, aplerotic, 20–30  $\mu$  in diameter, mostly 25  $\mu$ , centric.

The new species was collected from damp soils in two localities near Naini Tal, U. P., India, on August 18, 1980. The habitats are characterized by low temperature (–5 to 10° C), high water content (45%), low pH (6.5–7.5) and very high humus content.

Type cultures are deposited in the culture collection of Kumaun University, Naini Tal, India and C. M. I. England (IMI No. 262824).

### Discussion

The species grows well on sterile hemp seed halves in water culture. Mycelium becomes gritty and granular in appearance. Zoosporangia are formed 48 hours after inoculation. The primary zoosporangia are formed at the tips of the main or lateral hyphae. Secondary zoosporangia are formed in a cymose manner. Internal proliferation is also observed but very rare. The abundant zoospores leave the zoosporangia through a short apical or lateral discharge tube. The pyriform zoospores possess two anterior flagella, swim for about 10–30 seconds and encyst. The encysted zoospores discharge secondary reniform and laterally flagellate zoospores and swim for sometime before coming to rest and re-encyst. The encysted secondary zoospores germinate directly to form new colonies. Gemmae of different shape and size are formed within 3–4 days and behave as zoosporangia, but the formation of zoospores takes slightly more time than that of zoosporangia.

Abundant oogonia are formed on the tips of the lateral branches. Most of the oogonia have papilla of irregular shape. The antheridial branches are very small, mostly androgynous, rarely subhypogynous, and almost every oogonium has an antheridium. Fertilization takes place at low temperature (8–18° C). The single oospores are always spherical, and are distinguished by large numbers of spherically arranged oil droplets.

Dick (1969) established the genus *Scoliolegnia* which contains three species. The present species differs markedly from these taxa (compare illustrations in table 1). A key for the identification and separation of the four accepted species of *Scoliolegnia* follows below:

1. Zoosporangia abundant, secondary zoosporangia usually in basipetal series; oogonia predominantly with one oospore . . . 2

- 1\*. Zoosporangia rare; secondary zoosporangia formed by internal proliferation; oogonia with 2 or more oospores . . . . . 3
2. Gemmae absent; antheridia frequently absent; oospore mostly subeccentric . . . . . *S. subeccentrica*
- 2\*. Gemmae present; antheridia frequently present, androgynous or semi-hypogynous; oospore mostly centric . . . . . *S. centrica*
3. Antheridia present, oogonia regularly papillate; oospores subcentric . . . . . *S. asterophora*
- 3\*. Antheridia absent; oogonia irregularly papillate; oospores subeccentric . . . . . *S. blelhamensis*

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