Koichiro MIURA*: **Notes on filamentous fungi from Japan (§ 7—§ 8)****

三浦宏一郎*: 日本産の糸状菌類 (§ 7—§ 8)**

§ 7. **Euryancale sacciospora** Drechsler and **E. marsipospora** Drechsler (Zoopagales).

Euryancale sacciospora, a nematode-parasitic Phycomycete with curious conidial apparatus, was described by Drechsler in 1939 as the type of the genus *Euryancale*[1]. After that, two species, *E. obliqua*[2] and *E. marsipospora*[3][4], were added to this genus by the same author; both are nematode-parasites, too. But, as far as I know, these species have not been recorded from any countries excepting for U. S. A. In the course of survey for Japanese predacious fungi, I found *E. sacciospora* and *E. marsipospora*, and had the opportunity for studying them in comparison with each other.

The morphology of both fungi was very similar to each other. The mycelia consisted of hyaline, non-septate, branched hyphae (assimilative hyphae) and developed within the bodies of nematodes. From the assimilative hyphae originated the reproductive hyphae as lateral branches. After perforating the integument of nematodes, they elongated on the surface of agar plate. The reproductive hyphae were hyaline, continuous, prostrate and simple or sparsely branched. As they elongated, many conidiophores were produced laterally and successively at intervals. When infected nematodes succumbed under the surface of agar plate, reproductive hyphae grew for quite a distance through the agar medium and then emerged onto the surface to bear conidiophores. The conidiophores were simple and consisted of three parts: the prostrate filamentous proximal part, the prostrate more expanded median part and the upcurved distal part (Fig. 1-V). In the manner of conidium formation, both species were very similar to each other. From the distal end of the conidiophore, a slender cylindrical sterigma developed vertically. After it reached to a certain length, a small bulbous enlargement (nodule) was formed at the tip of the sterigma. Then, from

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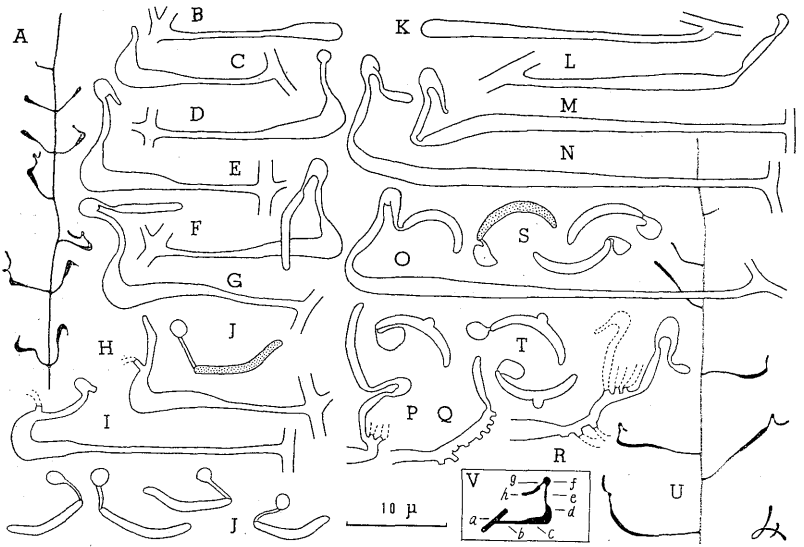

Fig. 1. A-J. *Euryancale sacciospora*. A. Portion of reproductive hypha (schematic). B. Young conidiophore. C-I. Conidiophores in different stages of spore-formation. J. Mature conidia. K-U. *Euryancale marsipospora*. K. Young conidiophore. L-O. Conidiophores in different stages of spore-formation. P-R. Apical portions of older conidiophores. S. Mature conidia. T. Mature conidia, each bearing a papillate projection. U. Portion of reproductive hypha (schematic). V. Schematic diagram of conidial apparatus; a. reproductive hypha; b-d. conidiophore, b. filamentous proximal part, c. more expanded median part, d. upcurved apical part, e. sterigma; f. nodule; g. neck; h. young conidium.

the adaxial side or, less often, from the abaxial side of the nodule, a delicate filamentous outgrowth (neck) elongated downwards, whereon a slenderly cylindrical conidium was produced (Fig. 1-V). When the spore was mature, the sterigma, the nodule and the neck were evacuated to act, as a whole, as a separating cell. The conidium was liberated by rupture of the separating cell. The second conidium was formed after the same manner as the first. The sterigma for the second conidium developed on the adaxial side a little below the tip of the conidiophore. As a result of successive formation of conidia, an elongated beak bearing many stump-like protuberances on its abaxial side was formed on the conidiophore. Empty sterigmata were often observed on these protuberances. The conidia were hyaline, non-septate, slenderly cylindrical and curved, each bearing an empty pouch-like appendage at its end. Sexual reproduction did not take place; it is unknown

in any species of the genus.

E. sacciospora Drechsl. (Fig. 1, A–J.)

This fungus appeared in a maize-meal agar plate culture which had been planted with a pinch of moss cushion collected in Tsugawa, Yamagata Pref. in September 1963 (Miura no. 1391). The assimilative hyphae were 1.5–3.3 μ wide. The reproductive hyphae were 0.8–1.4 μ wide. The conidiophores were arranged oppositely in pairs or, less often, singly. They were 19–27 (–31) μ in total length, 0.5–0.8 μ wide in the filamentous proximal part and 2.0–2.8 μ wide at widest part. The upcurved distal part of conidiophore was well-developed and the apex was 4.2–6.5 μ above the agar plate. The sterigmata were 3.3–5.5 × ca. 0.6 μ in size; the nodule 1.4–2.3 μ in diameter; the neck 1.7–3.0 × 0.3–0.5 μ in size. The conidia were 8.0–10.8 μ long (average 9.4 μ, N=100) and 0.8–1.0 μ wide, each bearing at its end a pouch-like appendage connected by a slender neck. According to Drechsler, the empty appendage originated from the nodule and the neck of conidial apparatus. But this was not ascertained in my material. The size of conidia of my material is a little shorter and wider than that given by Drechsler. Earlier stages of infection were not observed.

E. marsipospora Drechsl. (Fig. 1, K–U.)

This fungus was observed in a maize-meal agar plate culture which had received the addition of a small quantity of grass-land soil collected by Mr. S. Tokumasu in Kafuka, Rebun Isl. in September 1970 (no. 1760). The assimilative hyphae were 1.4–3.2 μ wide. The reproductive hyphae were upto 2 mm or more in length and 0.8–1.4 μ in width. The conidiophores were arranged singly or rarely in pairs. They were (23–) 31–44 (–51) μ in total length, 0.6–1.0 μ wide in the filamentous proximal part and 1.5–2.2 μ wide at widest part. The upcurved distal part of conidiophore was meagerly developed and conidiophores were often straight and prostrate from tip to base. The sterigmata were 4.2–6.9 × 0.7–1.1 μ in size; the nodule 1.5–2.1 μ in diameter; the neck 1.7–3.4 × 0.3–0.5 μ in size. The conidia were (7.8–) 8.8–10.9 μ long (average 9.8 μ, N=60) and 1.0–1.3 μ wide, each bearing a pouch-like appendage at its end. The appendages were nearly sessile. The origin of the appendage of conidia was not ascertained. A papillate projection was often observed on the convex side of detached conidium, but its function is uncertain. The size of conidia of my material is a little longer

and narrower than that given by Drechsler. Earlier stages of infection were not observed.

The conidial size of *E. sacciospora* given by Drechsler is 11–13×0.7 μ and that of *E. marsipospora* is 7–9×1.2–1.6 μ. In their key to the nematode-destroying fungi, Cooke and Godfrey accepted the size of conidia as a distinguishing characteristic between the two species[5]. But, in my materials, the difference in size of conidia between the two species is not clear. I think these two species may be more adequately distinguished from each other in the shape of conidiophore and the appendage of conidium. Although our knowledge on this genus is very imperfect, the conidiophore, which produces conidia successively through proliferation, seems to suggest the relationship of this genus to the genus *Stylopage*.

§8. A new species of **Lunulospora** (Moniliales). (Fig. 2)

Lunulospora is a monotypic genus erected by Ingold in 1942 on the type of *L. curvula*[6]. This genus is characterized by the elongate, curved, unicellular aleurioconidium which is attached at a point some way from either end to a separating cell born on the top of conidiophore. *L. curvula* is an aquatic fungus and, in our country, it is rather common in mountain streams. Recently, I found an undescribed fungus, apparently belonging to this genus, on the decaying leaves which had been kindly collected by Mr. S. Tokumasu from a small stream in Yaku-shima Isl., Kagoshima Pref.

Lunulospora cymbiformis Miura, sp. nov.

Fungus aquaticus submersus; mycelio hyalino septato, ramoso. Conidiophora singula, simplicia vel parce ramosa, (60–) 130–470μ longa, 1.8–2.5μ lata, hyalina. Conidia (aleurioconidia) terminalia, continua, cymbiformia, utrinque elongata, 75–115 μ longa, 3.5–5.7 μ lata, utrinsecus ad 0.8 μ attenuata, curvata vel loco ad cellulam separantem (separating cell) affixo angulata, latere convexo prope basim ad cellulam separantem brevem cylindricam affixa, hyalina.

Hab. in foliis putrescentibus decidurum dicotyledonearum plantarum in flumine submersis, Yaku-shima Ins., Kagoshima (February 15, 1971, Miura no. 1097—type in TNS).

Single-spore cultures were established on yeast extract-glucose agar. The mycelial hyphae were hyaline, branched, septate and 1.0–3.6 μ wide. On this solid medium, sporulation did not take place. But, conidiophores

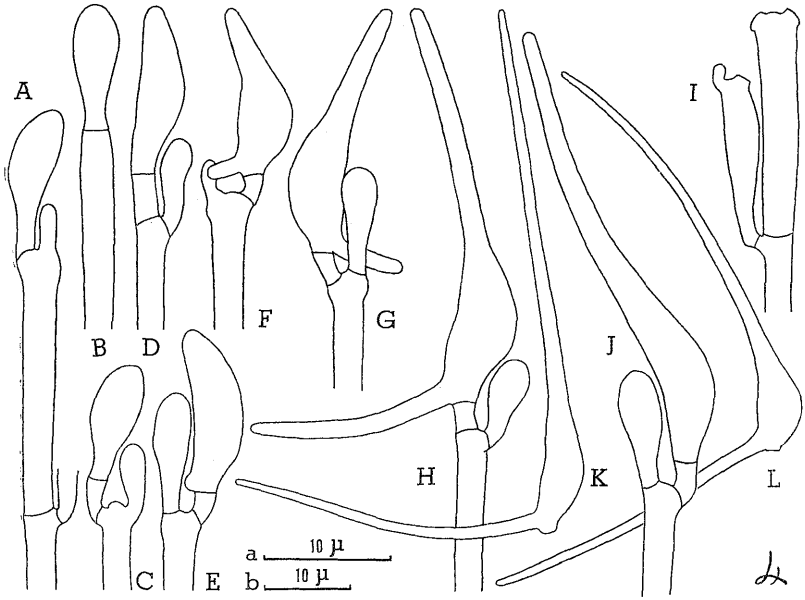

Fig. 2. *Lunulospora cymbiformis*. A-H. Conidia in different stages of development. I. Conidiophore, of which all the conidia have been liberated. J. Conidiophore with two coidia, one of which lacks its basal elongation. K-L. Mature conidia. (Scale a for A-H, b for K and L.)

and conidia were produced, when a strip of the colony was immersed in water. The conidiophores were erect, simple or sparsely branched, (60–) 130–470 μ long and 1.8–2.5 μ wide; at the tip of each branch 1-3 conidia in varying stages of development were seen. Conidium formation was initiated by the production of a clavate swelling on the top of the conidiophore. This swelling was soon delimited from the sporophore by a basal septum. The clavate cell, as it grew, became pyriform and, then, boat-shaped. Shortly after the clavate cell was cut off, another septum was laid 2.0–3.5 μ above the first one. The upper cell was a spore primordium and the lower one acted as a separating cell when the conidium was mature. At first, the primordium had a single growing point which was apical. After the primordium became boat-shaped, a new growing point appeared near the base. At this stage, the profile of primordium was reminiscent of

the valve of *Cymbella*, a genus of diatoms. Both growing points proceeded to grow to form an apical and a basal elongation. The basal elongation grew in a lateral direction. So, the conidium became curved like a very open C or bent like a more or less open L. The mature conidium was cymbiform with an apical and a basal elongation, and curved or angled at the attachment point to the separating cell. It was 75–115 μ in total length (45–70 μ long excluding the basal elongation) and truncate at the attachment point to the separating cell where the diameter was 1.4–2.1 μ, but it widened upwards becoming 3.5–5.7 μ in width at a distance of 5–8 μ from the base, but above that it attenuated to about 0.8 μ at the tip. The basal elongation was 25–45 μ in length and 1.5–2.3 μ in width, tapering to about 0.8 μ at the tip. Very rarely, conidia without the basal elongation were seen. The separating cells were cylindrical and 2.0–3.5×1.4–2.1 μ in size.

My fungus agrees well with the type species in the manner of conidium ontogeny and the basic structure of conidial apparatus and conidia. But it differed in shape of conidia; the configuration of conidia of this fungus has a resemblance to that of *Centrospora acerina* (Hart.) Newhall, whilst the conidia of the type species are lunate or sigmoid. I think this fungus merits recognition as a distinct species.

My hearty thanks are due to Dr. Y. Kobayasi for correcting the Latin diagnosis.

References

1) Drechsler, C. 1939. Mycologia **31**: 388–415. 2) —— 1955. Ibid. **47**: 364–388. 3) —— 1951. Ibid. **43**: 161–185. 4) —— 1959. Ibid. **51**: 787–823. 5) Cooke, R. C. & B. E. S. Godfrey 1964. Trans. Brit. Mycol. Soc. **47**: 61–74. 6) Ingold, C. T. 1942. Trans. Brit. Mycol. Soc. **25**: 339–417, Pls. XII–XVII.

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次の 3 種の菌類を本邦菌類フロラに加える。1) と 2) は共に原記載以後初めての記録であり，特に両者の形態を比較・検討した。両者はその分生子柄の形態と分生子の附属物とによって明瞭に区別できる。3) は新種である。1) *Euryancale sacciospora* Drechsl. (線虫内部寄生菌，ゾオパゲ目)，2) *E. marsipospora* Drechsl. (〃, 〃)，3) *Lunulospora cymbiformis* Miura (水生菌，不完全菌類)。