

*Elachista tenuis* Yamada (Phaeophyta) from  
Kangneung, Eastern Coast of Korea

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褐藻類의 一未記錄種 *Elachista tenuis* Yamada(알삼이 모자반털 : 新稱)

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ABSTRACT

*Elachista tenuis* Yamada, epiphytic on *Sargassum confusum*, is reported for the first time in Korea. It forms hemispherical tufts by pseudoparenchymatous medulla and assimilatory filaments. The cells of assimilatory filament are not constricted at septa, and nearly equal in breadth from base to apex. Plurilocular sporangia are rather abundant, while unilocular sporangia rare.

INTRODUCTION

*Elachista tenuis* was introduced by Yamada(1928) from Mutsu Bay, Japan with the plants epiphytic on *Sargassum confusum*. He distinguished it by the characters of assimilatory filaments and the chromatophores, without finding the unilocular sporangia. When Takamatsu (1937) reported this plant from Mutsu Bay and Uzen Bay, Japan, he separated a forma *pacifica* from the species by the characters of medullary filaments and plurilocular sporangia.

Since then, Noda (1966) listed *E. tenuis* f. *tenuis* from Changtutao, China, whereas Honda (1969), Noda and Yokohama (1971), and Noda and Kobayashi (1972) listed f. *pacifica* from Niigata and Hokkaido areas of the Japan Sea coasts, Japan. Noda and Yokohama figured unilocular sporangia of f. *pacifica* without the description.

Our plants collected from Kangneung, the Japan

Sea coast of Korea, bears both unilocular and plurilocular sporangia, and accords quite well with Yamada's in diagnostic characters.

DESCRIPTION

Plants epiphytic, tufted, spherical to hemispherical, lubricous, deep brown, 3-6 mm high; attachment composed of entangled branched filaments; medulla pseudoparenchymatous, composed of tightly agglutinated branched filaments in 5-10 oblong to ellipsoidal cells, medullary cells 15-55  $\mu\text{m}$  broad, 70-450  $\mu\text{m}$  long; assimilatory filaments arising from superficial cells of medulla, unbranched, nearly equal in breadth or gradually attenuate to apex, not constricted at septa, composed of cylindrical cells in 9-14  $\mu\text{m}$  breadth, 18-26  $\mu\text{m}$  length; paraphyses straight or slightly curved, clavate, constricted at septa, 150-350  $\mu\text{m}$  long, 9-20 celled; chromatophores parietal, located in center of cells;

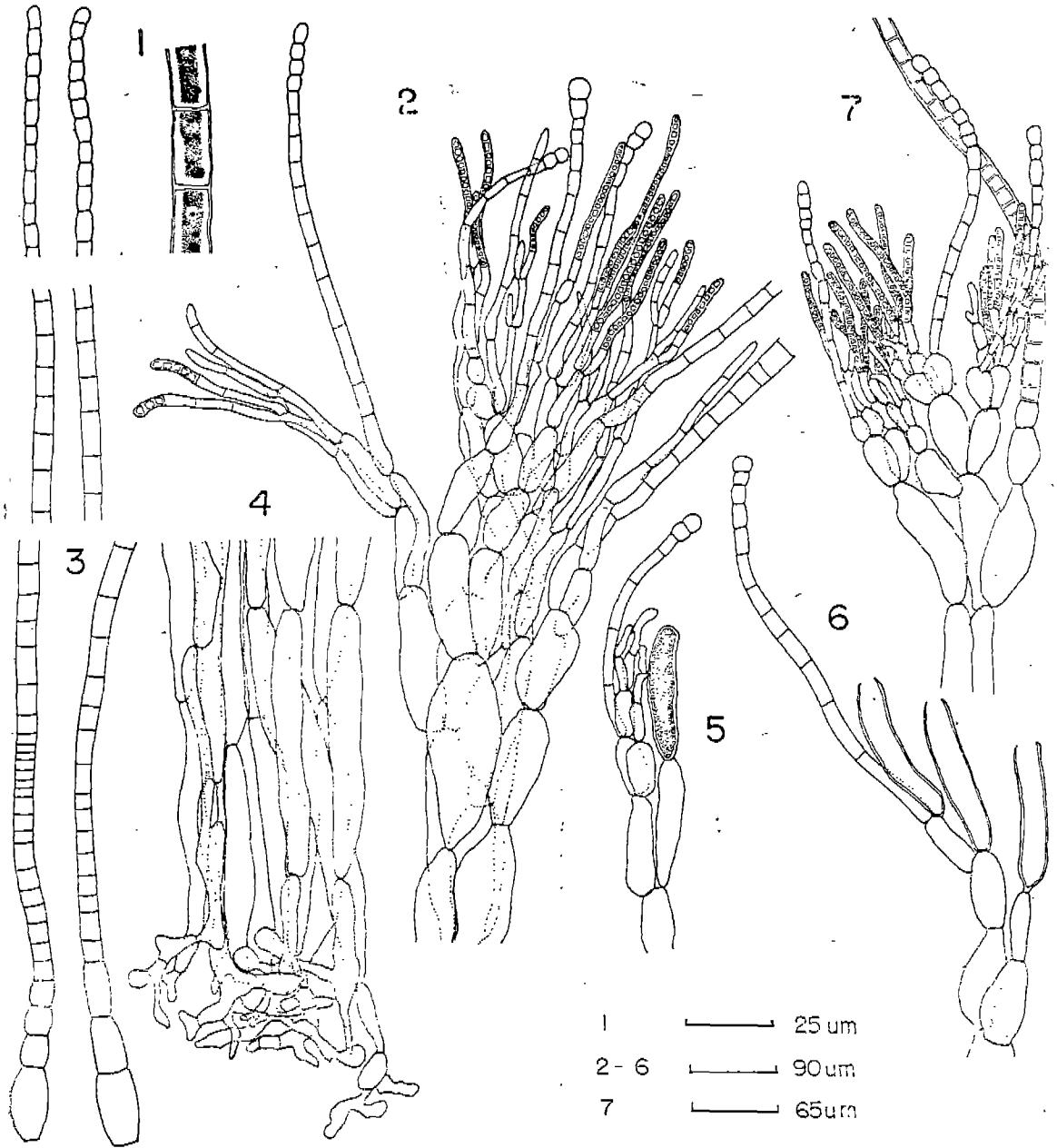


Fig. 1. Vegetative structure and reproductive organs of *Elachista tenuis* Yamada.

1. Cells of assimilatory filament; 2 and 7, Upper part of medulla with assimilatory filaments, paraphyses and plurilocular sporangia; 3, Assimilatory filaments in lower, middle and upper portions; 4, Attachment and lower part of medulla in part; 5 and 6, Unilocular sporangia, 6 showing empty ones.

hairs and rhizoids wanted; unilocular sporangia rare, oblong, estipitate, 16-23  $\mu\text{m}$  broad, 75-105  $\mu\text{m}$  long; plurilocular sporangia abundant, stipitate, cylindrical, uniseriate, unbranched, containing 10-35 flat loculi in single row, 6-8  $\mu\text{m}$  broad, 70-160  $\mu\text{m}$  long.

Korean Name : 알송이포자반털 (*nom. nov.*)

Habitat : Epiphytic on *Sargassum confusum* C. Ag.

Materials : Kangneung (Mar. 28, 1974), the Japan Sea coast, Korea.

Our plants were epiphytic in the cryptostomata of *Sargassum confusum*, as in original description (Yamada, 1928). They had much entangled attachments forming a filamentous tufty mass showing 10-20  $\mu\text{m}$  broad and about 150  $\mu\text{m}$  long filaments. The medullary filaments are hyaline, branched dichotomously and constricted at septa. The medullary cells are elongated oblong in the lower portion, showing 15-50  $\mu\text{m}$  in breadth and 250-450  $\mu\text{m}$  in length, and ellipsoidal in the upper portion, showing 15-50  $\mu\text{m}$  breadth and 70-160  $\mu\text{m}$  length.

Cells of assimilatory filament are 12-14  $\mu\text{m}$  broad, 24-26  $\mu\text{m}$  long in the lower portion, 11-13  $\mu\text{m}$  broad, 18-26  $\mu\text{m}$  long in the middle portion, and 9-11  $\mu\text{m}$  broad, 10-16  $\mu\text{m}$  long in the upper portion. The wall is about 2.5-4  $\mu\text{m}$  thick. Intercalary growth of the filaments is seen at the basal portion. The paraphyses are comparatively rare. Their upper cells are barrel-shaped in 6-10  $\mu\text{m}$  breadth and 8-15  $\mu\text{m}$  length, while the lower cells are cylindrical and scarcely constricted at septa, showing 5-7  $\mu\text{m}$  breadth and about 20  $\mu\text{m}$  length.

The plurilocular sporangia are 6-8  $\mu\text{m}$  broad, 70-160  $\mu\text{m}$  long and contain 10-35 flat loculi which are arranged regularly in a single row. The long and cylindrical stalk is two to three celled. The unilocular sporangia are elongated oblong as seen in *f. pacifica* and 16-23  $\mu\text{m}$  broad and 73-105  $\mu\text{m}$  long. They are rare and occur singly or in groups. No stalk cell is recognizable.

Considering the characters mentioned above, our plants are confined well to the forma *tenuis* and seems to be much different from *f. pacifica* defined by Takamatsu (1937) in the shapes of assimilatory

filaments, chromatophores, and also of the plurilocular sporangia by the arrangement of loculi. Since these characters are adopted currently as the criteria to discern the species, it is dubious that *f. pacifica* would be really included in this species.

According to the recent life history studies, the members of the genus *Elachista* comprise two heteromorphic phases, a macrothallus phase and a microthallus phase, both showing however the asexual reproduction only (Kornmann, 1962; Blackler & Katpitia, 1963; Wanders *et al.*, 1972; Koeman & Cortel-Breeman, 1976, etc.). As a result, both the reproductive organs, unilocular and plurilocular, found in typical *Elachista* phase (macrothallus phase) are considered to be sporangia. It remains therefore still as a problem whether these members want the sexual phase, and the chromosome number is recovered only by the vegetative diploidization as seen in *E. stellaris* (Wanders *et al.*, 1972) and in *E. fucicola* (Koeman & Cortel-Breeman, 1976), or not.

## REFERENCES

- Blackler, H. and A. Katpitia. 1963. Observations on the life history and cytology of *Elachista fucicola*. *Trans. Proc. Bot. Soc. Edin.* 39 : 392-395.
- Honda, S. 1969. On the marine algae of Toyama Bay in Japan Sea. *Bull. Jap. Soc. Phycol.* 17 : 104-108.
- Koeman, R.P.T. and A.M. Cortel-Breeman. 1976. Observations on the life history of *Elachista fucicola* (Vell.) Aresch. (Phaeophyta) in culture. *Phycologia* 15 : 107-117.
- Kornmann, P. 1962. Plurilokulare Sporangien bei *Elachista fucicola*. *Helgol. Wiss. Meeresunters.* 8 : 293-297.
- Noda, M. 1966. Marine algae of northeastern China and Korea. *Sci. Rep. Niigata Univ. ser. D*, no. 3, 19-85.
- Noda, M. and K. Kobayashi 1972. Marine algae collected on the sandy coast of Niigata City facing the Japan Sea. *Ibid.* 20 : 94-100.
- Noda, M. and S. Yokohama. 1971. On the marine algae from Kojima island off the southwestern coast of Hokkaido. *Ibid.* 19 : 15-20.
- Takamatsu, M. 1937. *Elachista* aus dem nordöstlichen Honshu, Japan. *Saito Ho-on Kai Mus. Res. Bull.* no. 17, 170-173, figs. 10-11, pl. 21, figs. 3, 4.
- Wanders, J.B.W., Hoek, C. van den, and E.N. Schillern-van Nes 1972. Observations on the life history of *Elachista stellaris* (Phaeophyceae) in culture. *Neth. J. Sea Res.* 5 : 458-491, pls. 1-4.
- Yamada, Y. 1928. Marine algae of Mutsu Bay. *Sci. Rep. (Biol.) Tohoku Imp. Univ.* 3 : 511-513, fig. 11.

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