

**Study of a freshwater red alga,  
*Compsopogonopsis fruticosa* (JAO) SETO comb. nov.  
(Compsopogonales, Rhodophyta) from China**

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The isotype specimen of *Compsopogon fruticosus* JAO 1941 (SC1145) was examined and ascertained to have a mode of formation of cortex characteristic for the genus *Compsopogonopsis*. Therefore, *Compsopogon fruticosus* is transferred from the genus *Compsopogon* to the genus *Compsopogonopsis* as *Compsopogonopsis fruticosa* (JAO) SETO comb. nov..

*Key Index Words:* China; *Compsopogonopsis fruticosa*; freshwater Rhodophyta; study; taxonomy.

The genus *Compsopogonopsis* was established by KRISHNAMURTHY (1962) with *Compsopogonopsis leptoclados* (MONTAGNE) KRISHNAMURTHY. This species was separated from the genus *Compsopogon* based on the characteristic mode of formation of cortex.

CHIHARA (1976) described *Compsopogonopsis japonica* as a new species from Sakai, Gunma Prefecture, Japan. JAO (1941) described *Compsopogon fruticosus* as a new species from Kan-tungtze, Pehpei, Szechwan, China, however, he did not observe the mode of formation of cortex in that species. In the present study, the isotype of *Compsopogon fruticosus* was examined to ascertain the mode of formation of cortex.

#### **Specimen examined**

The isotype specimen of *Compsopogon fruticosus* (SC1145) was collected by JAO Chin Chih from Kan-tungtze, Pehpei, Szechwan, China in February, 1940, deposited at the Herbarium of Institute of Hydrobiology, Academia Sinica Wuhan, People's Republic of China. This specimen was found on the concrete wall of a mill dam, where the water was fast-run-

ing and coming from a cave of limestone.

#### **Observations**

Thallus of *Compsopogon fruticosus* is filamentous, cylindrical, constricted here and there, about 15 cm long, profusely branched, main branches are 0.2–0.5 mm in diameter (Fig. 1). Uniseriate parts of thallus are composed of discoid axial cells. Apical cells of the uniseriate part of the thallus are dome-shaped, 11.0–12.5  $\mu\text{m}$  long and 12.5–13.8  $\mu\text{m}$  wide (Fig. 2). The initials of cortical cells are produced from the lower part of the axial cells of the uniseriate part of the thallus; the protuberances are formed from the lower part of the axial cells. The initials of the cortical cells are separated from the protuberances by oblique or horizontal walls, which then grow downwards as rhizoid-like cortex filaments (Figs. 6–9). The cortex consists of two layers of cells, of which the outermost cortical cells are tritopentagonal, and 14.0–55.0  $\times$  12.0–35.0  $\mu\text{m}$  in size (Figs. 4–5). Central cells are short, disc-shaped, some of which are retained even in the aged parts of the branch-

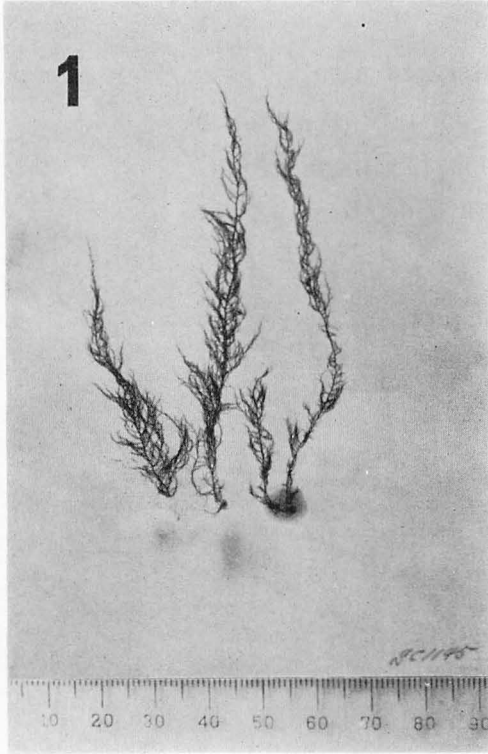
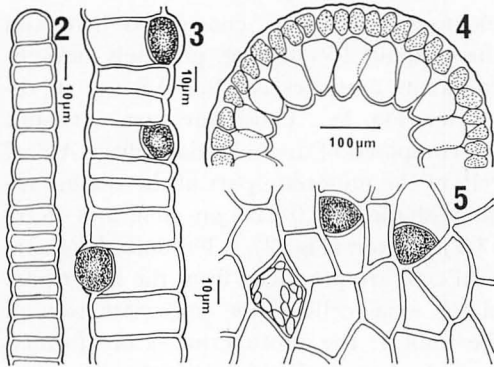
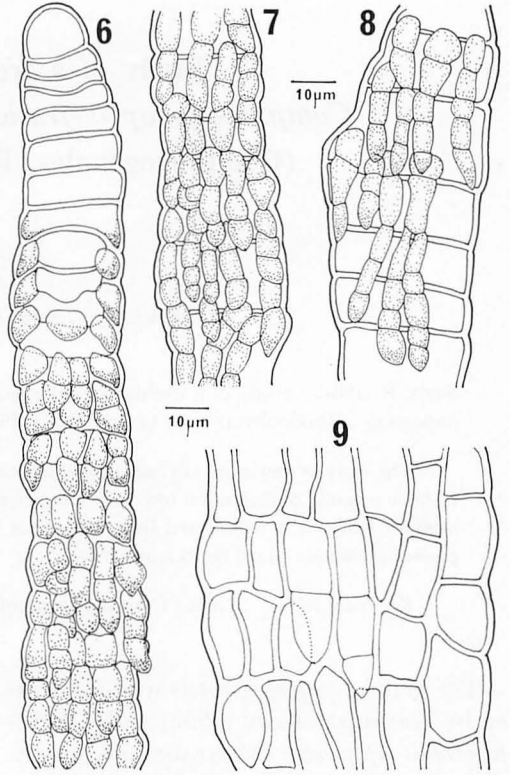


Fig. 1. Isotype of *Compsopogonopsis fruticosa* (JAO) SETO comb. nov. (SC 1145). Scale=mm.



Figs. 2-5. *Compsopogonopsis fruticosa* (JAO) SETO comb. nov.: Fig. 2. An apical part of the uncorticated axis showing discoid cells and the apical cell; Fig. 3. Formation of monosporangia in the young uncorticated branch; Fig. 4. Cross section of the main branch showing two layered cortex and the retaining central cell; Fig. 5. Outermost cells of cortex showing two monosporangia and plastids in the cells respectively.

es. Monosporangia are produced by an unequal division of cortical cells or cells of



Figs. 6-9. The formation of cortex in *Compsopogonopsis fruticosa* (JAO) SETO comb. nov.: Fig. 6. An apical part of the uniseriate axis showing rhizoid-like filaments initiated from the tubular outgrowths on axial cells; Figs. 7 and 8. Well grown parts of cortical rhizoid-like filaments from axial cells; Fig. 9. Surface view of young cortical cells formed from rhizoid-like filaments.

uniseriate parts of the thallus, 15.0-22.5  $\mu\text{m}$  in diameter (Figs. 3, 5). Microsporangia were not observed.

### Discussion

The genus *Compsopogonopsis* was separated from the genus *Compsopogon* by the characteristic mode of formation of cortex (KRISHNAMURTHY 1962). According to CHIHARA (1976) *Compsopogonopsis japonica* differs from *C. leptoclados* in their outermost cells of cortex being larger than those of the latter. SETO (1982) reported an additional criterion for *C. japonica*, namely, the axial cell of an uniseriate part of the thallus is divided vertically to produce the

initials of cortical cells on both sides of axial cells, and each initial grows downwards forming the rhizoid-like cortical filament. On the other hand, for *C. leptoclados* the tubular outgrowths are formed from the lower part of the axial cell of an uniseriate part of the thallus. The initials of cortical cells are separated from the tubular outgrowths by horizontal or oblique walls which then elongate downward as rhizoid-like cortical filaments. Thus there is a difference between *C. japonica* and *C. leptoclados* in the early development of the rhizoid-like cortical filaments. JAO (1941) mentioned that *Compsopogon fruticosus* resembles *Compsopogon leptoclados* MONTAGNE (= *Compsopogonopsis leptoclados* (MONTAGNE) KRISHNAMURTHY 1962) in height of plants and the densely branched property, but differs from the latter in having 1) greater diameter of the fully developed part of the thallus, 2) very short axial cells, and 3) all parts of the thallus being distinctly constricted here and there into segments. He did not observe the mode of the early formation of cortex for *C. fruticosus*.

In the present study, the examination of the isotype specimen of *Compsopogon fruticosus* (SC1145) shows that the initials of cortical cells are produced from the lower part of the axial cells, and cut off from the tubular outgrowths by oblique or horizontal walls in a mode similar to that observed in *Compsopogonopsis leptoclados*. The Chinese specimen examined in the present study differs from *Compsopogonopsis leptoclados* in above mentioned, three characteristics and it also

differs from *C. japonica* in the mode of the early formation of cortex. Therefore, the Chinese specimen, *Compsopogon fruticosus*, should be transferred from the genus *Compsopogon* to the genus *Compsopogonopsis* as follows:

*Compsopogonopsis fruticosa* (JAO) SETO  
comb. nov. Basionym: *Compsopogon fruticosus*  
JAO 1941, p. 248, Tab. II, figs. 10-14.

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### 瀬戸良三：中国産淡水紅藻類 *Compsopogonopsis fruticosa* (JAO SETO) comb. nov. について

中国科学院武漢水生生物研究所の饒欽止 (C. C. JAO) 教授から提供された *Compsopogon fruticosus* JAO の isotype を観察した結果、本種の皮層形成の様式は、オオイシソウ属と基本的に異なるオオイシソウモドキ属の様式であることが判明した。また、後に皮層に成る若い藻体の主軸細胞に生ずる仮根状糸の始原細胞の発生は、*Compsopogonopsis japonica* と異り、*C. leptoclados* によく似ている。後者に比べて、本藻は、1) 藻体主枝の幅が広く、2) 中軸細胞の各々が短く、3) 藻体の各節部がよくくびれている、これらの3つの特徴から、*C. leptoclados* と区別される。新しい組合せとして、本藻を *Compsopogonopsis fruticosa* (JAO) SETO comb. nov. として報告する。(662 西宮市岡田山4-1, 神戸女学院大学研究所)