

Hiroshi YABU and Hajime YASUI: Occurrence of a tetraploid in *Sargassum confusum* AG.

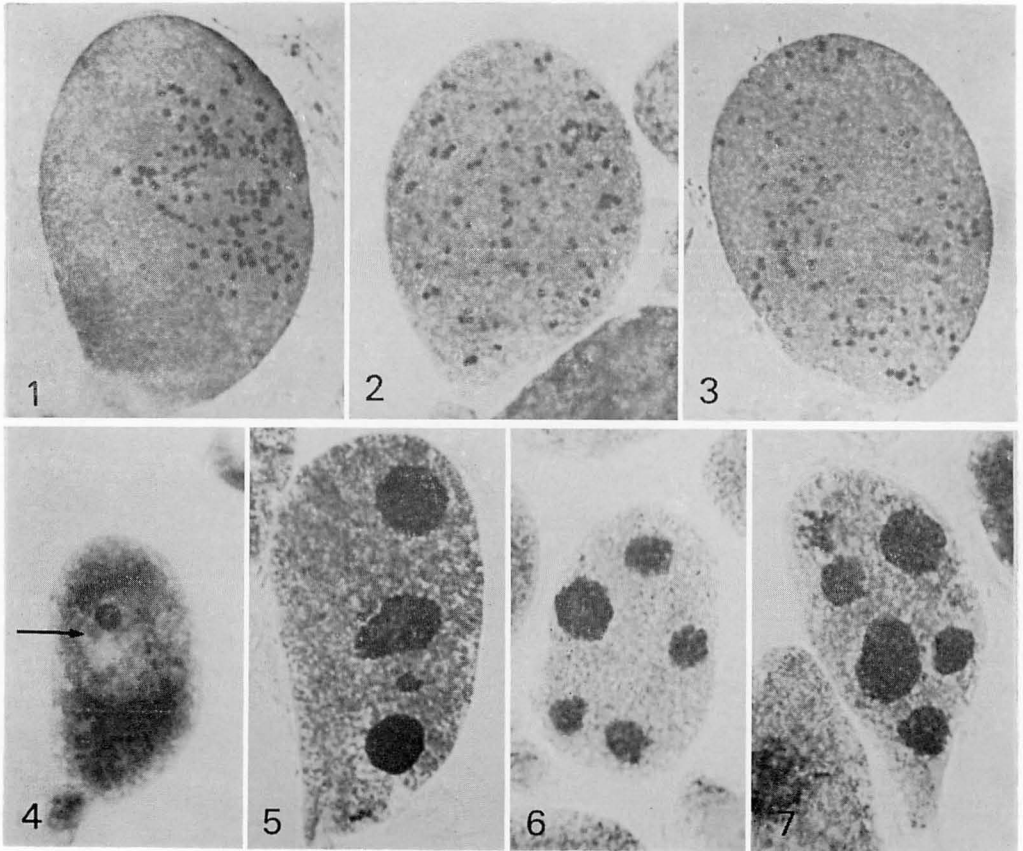
Key Index Word: Chromosome; *Sargassum confusum*; tetraploid.

Hiroshi Yabu and Hajime Yasui, Faculty of Fisheries, Hokkaido University, Hakodate, Hokkaido, 041 Japan.

In the course of a recent cytological study on *Sargassum confusum* AGARDH, a populous species along the coast of the Japan Sea, we ascertained the occurrence of a few tetraploid plants in Hakodate and its vicinity by chromosome counts in the antheridia.

On August 2nd, 1982, ten male plants were

collected at Usujiri in Minamikayabe-Cho, Hokkaido. When observed on that day all of them were not sufficiently matured, so the conceptacles taken from each plant were kept alive in glass vessels with filtered sea water at a constant temperature of 20°C, in the laboratory. Thereafter, nuclear move-



Figs. 1-7. Nuclear division in the antheridia of *Sargassum confusum* ($n=ca. 64$) collected at Usujiri in Minamikayabe-Cho Hokkaido on August 2nd, 1982. 1-3. Metaphase chromosomes in the first nuclear division; 4. Early prophase in the first nuclear division, showing chromophilous spherule (arrow); 5. Late telophase in the second nuclear division. One nucleus is degenerating; 6-7. Late telophase in the third nuclear division, showing an abnormal number of five (Fig. 6) and six nuclei (Fig. 7). Magnification; All figures $\times 1,200$.

ments in the antheridia were examined every day using the smear method with acetocarmine. Five to seven days later, metaphase nuclei at the first division in the antheridia were encountered abundantly, so the maturing portions of the conceptacles were fixed with acetic alcohol (3:1) and stained with aceto-iron-haematoxylin-chloral hydrate solution (WITTMANN, 1965).

Our observations showed that eight individuals had a chromosome number of $n=32$, as was already reported by ABE (1933), but the remaining two had ca. 64 loosely, or tightly paired chromosomes in small but various sizes (Figs. 1-3). Additional male plants were collected to gain more detailed data on the occurrence of such tetraploid plants, and to observe the characteristic features of the thalli. The same method as described above was employed for twenty thalli from Usujiri, and twenty each from Anama and Nanaehama in Hakodate. Out of those thalli only two tetraploid plants were obtained, one each from Usujiri and Anama, none from Nanaehama.

In the tetraploid thallus, the process of nuclear division within the antheridium was essentially the same as that in the diploid thallus described by ABE (1933). The spherical body (=chromophilous spherule), which was observed by him at early prophase in

the first nuclear division, was also occasionally visible in the same stage (Fig. 4). However, antheridia with late prophase nuclei in the third to last (sixth) nuclear division were frequently found to have one or two degenerating nuclei (Figs. 5, 7), or an irregular number of nuclei due to the vanishing of a nucleus (Figs. 6, 7). Between the diploid and tetraploid thallus we could not find any distinction in both external appearance and internal structure. As was listed by ROBERTS (1966) and OHMORI (1975), the chromosome numbers in the Fucales have been recorded to be $n=32$ or less. Such tetraploid plants with $n=ca. 64$ described here have not been reported until now.

References

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藪 熙・安井 肇：フシスジモクの4倍体

北海道南茅部町白尻と函館市内穴瀬でフシスジモクの4倍体が得られた。これらの4倍体は外観、内部形態ともに2倍体との相違は認められなかった。4倍体の造精器内では第3回以後の核分裂終期で退化して消失する核がしばしば観察された。(041 函館市港町3-1-1 北海道大学水産学部)