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Masahiro NOTOYA: Tissue culture from the explant of *Ecklonia stolonifera* OKAMURA (Phaeophyta, Laminariales)

Key Index Words: Ecklonia stolonifera *Okamura—Phaeophyta—tissue culture.*
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As shown in Table 1. seven species have been used for the tissue culture in Laminariaceae. The present study shows the growth of tissues of *Ecklonia stolonifera* OKAMURA in several culture media under various temperatures.

The material used was collected at Tanosawa, Aomori Prefecture, in April, 1986. The tissues removed from the portions of meristematic zone, stipe or holdfast were quickly cleaned up by paper towels, then the surface was cut off. After treatment with absolute ethanol, the surface was burned in clean bench (Fig. 1). Explants were cut into 3–4 mm segments and placed on the following culture media solidified

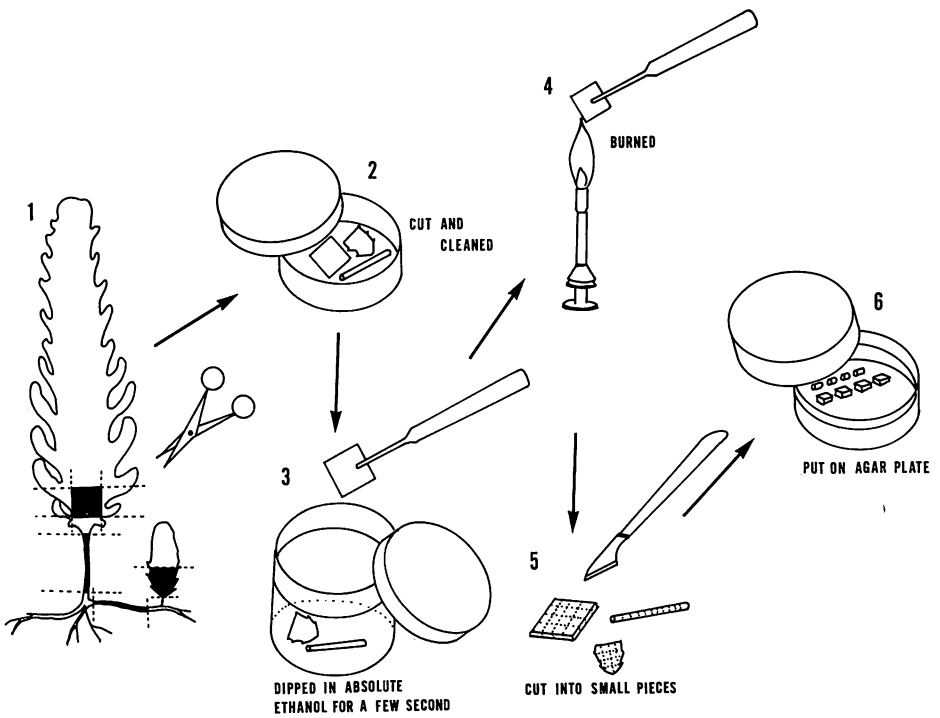

Fig. 1. Sterilization procedure for the preparation explant used in the present tissue culture experiment.

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Table 1. The species in Laminariales previously used for tissue culture.

Species	Tissue	Culture Medium		Result	Reference
Laminaria angustata	Blade	PESI	L	Callus=>Sporophyte	Saga et al. 1978
L. digitata	Blade	ASP6F2	S	Callus=>♂ ♀=>Sporophyte	Fries 1980
L. hyperborea	Blade	ASP6F2	S	Callus=>♂ ♀=>Sporophyte	Fries 1980
L. angustata	Stipe	ASP 12-NTA	S	Callus	Saga & Sakai 1983
L. japonica	Blade	MS+B_{12}+C-751	L	Callus=>Sporophye	Fang et al. 1983
L. saccharina	Stipe	ASP6F2, PESI, SWA	S,L	Callus=>♂ ♀=>Sporophyte	Lee 1985
Undaria pinnatifida	Blade	MS+B_{12}+C-751	L	Callus=>Sporophyte	Fang et al. 1983
Macrocystis pyrifera	Stipe	PESI	S,L	Callus	Polne-Fuller et al. 1986
Ecklonia stolonifera	Blade, Stipe, Holdfast	PES, PFSI, MG-JS, PESI-JS	S	Callus	Present study

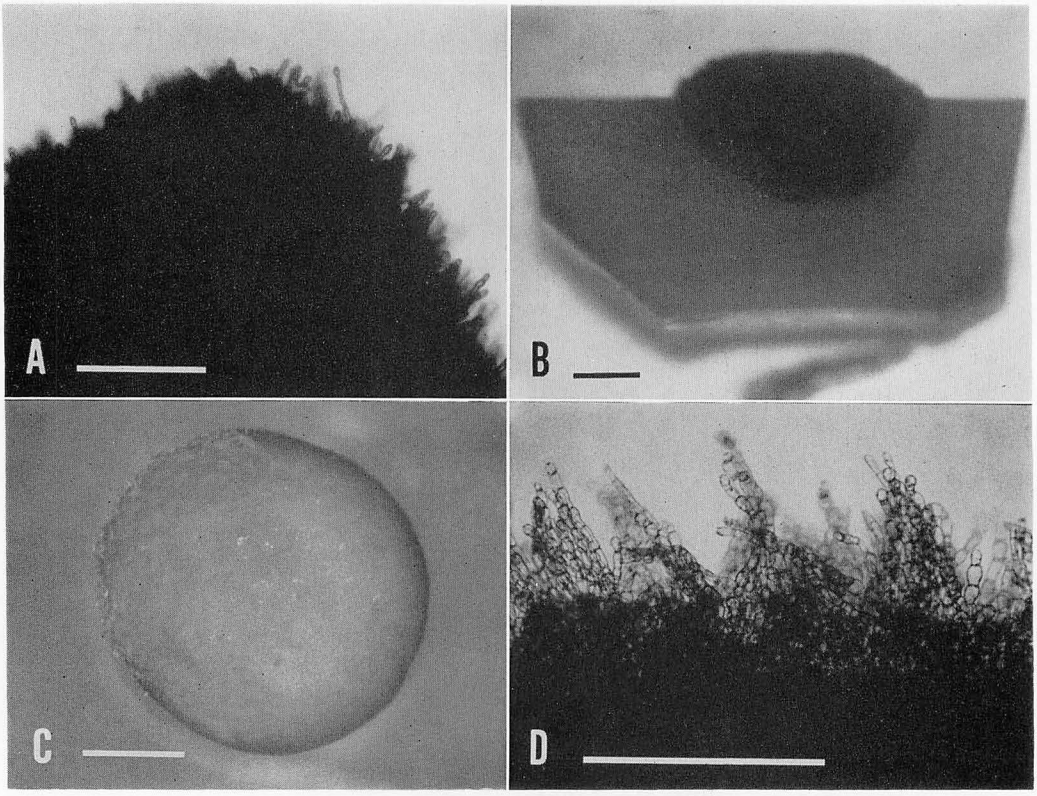

Fig. 2. Callus tissues developed into various parts of the frond of *Ecklonia stolonifera* OKAMURA. A; Blade, B; Stipe, C; Holdfast. Callus forming portion is noticed in the part which is weakly stained at the margin on the upper left side. D; Longitudinal section extending callus mass from medullary part of stipe. Scale bar= 500 μm.

with 1.5% agar in 50×15 mm Petri dishes, viz., PES (PROVASOLI 1968), PESI (TATEWAKI 1966), PESI-JS (natural seawater changed by Jamarin S in PESI) and MG-JS (natural seawater changed by Jamarin S in modified GRUND medium). The cultures were conducted at 10°C, 15°C, 20°C and 25°C, in 14h light and 10h dark cycle under 2000 lux by cool white fluorescent lamps. All the tissues gave rise to callus formation in PESI medium under 15°C (Fig. 2), of which those from the stipe grew excellently. The callus occurred mainly at the medullary part; they consisted of colourless or pale yellow branched filaments (Fig. 2C). The callus derived from the stipe tissue showed the best result in PESI-JS at 20°C (Table 2). The tissue cultures previously reported (Table 1) had been performed only at 10°C or 15°C. I guess that 20°C, a relatively high temperature, would be suitable for culture growth of the species of Laminariaceae such as *Ecklonia stolonifera* growing in the temperate region.

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Table 2. Formation of callus structure of *Ecklonia stolonifer* OKAMURA in culture. Occurrence of callus structure: (−)=not appeared, (+)=slightly appeared, (++)=abundantly appeared.

Age		1 Week				2 Week				3 Week				4 Week			
Temperature (°C)		10	15	20	25	10	15	20	25	10	15	20	25	10	15	20	25
Medium	PES	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−
	PESI	−	−	−	−	−	−	−	−	−	+	+	−	+	+	+	−
	PESI-JS	−	−	+	−	−	+	+	−	+	+	++	+	+	++	++	+
	MG-JS	−	−	−	−	−	−	−	−	−	−	+	−	−	−	+	−

能登谷正浩：ツルアラメの組織培養

ツルアラメの各組織，即ち葉部成長点付近，茎部，仮根部からの摘出組織を用いてカルス形成に及ぼす培地と温度の影響を調べた。その結果，茎の組織，ジャマリン人工海水を用いたPESI寒天培地，20°Cでそれぞれ最も良くカルスの発生が認められた。(039-34 青森県東津軽郡平内町大字茂浦字月泊10 青森県水産増殖センター)