***In vitro* propagation of Japanese cypresses through adventitious-bud multiplication from adult leaf-segment and somatic embryo explants**

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*In vitro* propagation of Hinoki (*Chamaecyparis obtusa* Sieb. et Zucc.), Sawara (*Chamaecyparis pisifera* Sieb. et Zucc.), and Hinokiasunaro (*Thujopsis dolabrata* (L.f.) Sieb. et Zucc. var.*hondae* Makino) through adventitious-bud multiplication was performed using adult leaf-segment explants. Explants collected from the field were surface-sterilized by agitating them in 3% (w/v available chlorine) sodium hypochlorite solution for 30 min, and then rinsed with sterile distilled water. About 2 cm long explants were cultured on plastic dishes containing 1/2MS medium (Murashige and Skoog 1962), LP medium (Aitken-Christie and Thorpe 1984), and DCR medium (Gupta and Durzan 1985) supplemented with 6 µ*M* 6-benzylaminopurine (BA) and 0.6 µ*M* 2,4-dichlorophenoxyacetic acid (2,4-D), 20 g l–1 sucrose, and 7 g l–1 agar. The cultures were kept at 25±1°C under photon flux density of about 65 µmol m-2 s-1 provided by cool white fluorescent lamps for 16 h daily. After about 2 months of culture, adventitious-bud formation from adult leaf-segment explants of the 3 Japanese cypresses was obtained. However, the frequency of adventitious-bud formation varied according to the medium, species, and genotype of the explants. Proliferated adventitious-buds were elongated on plant growth regulator free-1/2MS medium and then transferred to rooting media supplemented with indole-3-butyric acid (IBA) alone or in combination with naphthaleneacetic acid (NAA).

*In vitro* propagation of Sawara was also achieved by adventitious-bud multiplication from somatic embryo explants. Cotyledonary somatic embryos induced from embryogenic cells captured from seeds, were used as initial explants. Explants were cultured on plastic dishes containing WP medium (Lloyd and McCown 1981) supplemented with 1-10 µ*M* BA, 20 g l–1 sucrose, and 3 g l–1 gellan gum. The percentage of explants that formed buds and the number of buds per explant were recorded after about 2 months of culture. The best response was achieved at the lower BA level (an average number of 25.8 buds formed per explant on medium supplemented with 1 µ*M* BA). Adventitious-bud formation was observed both on the cotyledon and/or on the elongated hypocotyl region. Proliferated adventitious-buds were elongated on 1/2LP medium without plant growth regulators supplemented with 30 g l–1 sucrose and 5 g l–1 activated charcoal. Although sometimes spontaneous rooting was observed on elongation medium, rooting of elongated shoots was enhanced by a supply of 1 µ*M* IBA to the medium.

***Key words***

*Chamaecyparis, clonal propagation, cytokinin, tissue culture, Thujopsis, multiple shoots*