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Plant Regeneration from Loquat (*Eriobotria japonica* L.) callus

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Loquat (*Eriobotria japonica* L.) is a important fruit tree in Japan. It grows horticulturally all over Japan, especially in some districts including Nagasaki for fruit production. Collecting the loquat fruit requires hard labour by the cultivator, because of the height of the tree. In recent years, as loquat cultivators have become old, the harvest of the fruit has become very difficult. From this background, it can be seen why there is an urgent demand for dwarf loquat fruit trees.

Lin (1985) reported[1] loquat callus formation and plant regeneration from it, however the efficiency of this method was very low, only callus was obtained by this method with the material used in this report (MS[2] medium supplemented with 0.1 mg/*l* of 1-naphthaleneacetic acid (NAA) and 0.25 mg/*l* of Zeatin). Yang *et al*. (1991) reported[3] clonal plant formation of loquat through shoot-tip culture, but not from the callus. Therefore the aim of this study is to investigate the effect of phytohormonal condition on plant regeneration from the loquat callus, as one step of a method to obtain the dwarf plant through plant regeneration from hairy root[4,5].

Cotyledons 25-50 mm^2 in size were excised from 5-10 day-old seedlings of loquat which were asepticaly germinated in hormone free MS medium (germinating medium). Nine explants were cultured in 15×90 mm petri dish containing MS basal medium supplemented with 3% sucrose, 0.25% gellan gum and 2, 4-dichlorophenoxyacetic acid (2, 4-D, 1.0 mg/*l*). After 1 month, callus formation was observed. The callus was subcultured three times under the same conditions. The callus obtained after the 3-rd subculture was transferred to MS medium supplemented with 3% sucrose, 0.25% gellan gum, and a combination of NAA (0.1 mg/*l*), and 6-benzyladenine (BA, 1.0 mg/*l*). After 1 month, small shoots were regenerated from 1-3 callus out of nine (**Fig. 1-A**). Regenerated shoots were cultured in a flask containing half ion-strength MS medium supplemented with 1.5% sucrose and 0.75% gellan gum. After 1 month, the shoots grew and rooted (**Fig. 1-B**). These plants ceased further growth, and vitrification[6] of the plants was observed. All cultures were incubated at 25°C under light (1500 lux).

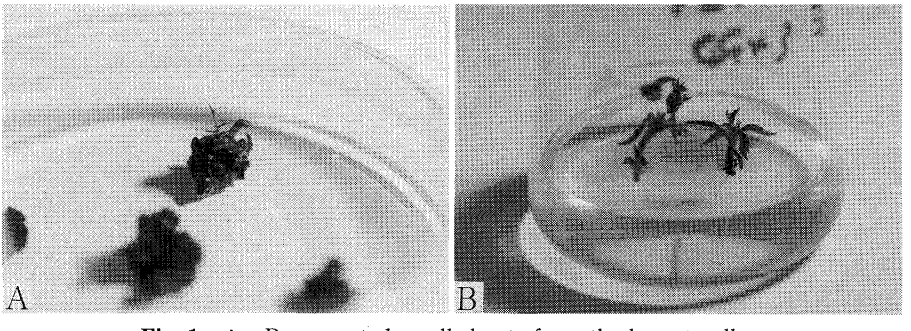

Fig. 1 A : Regenerated small shoots from the loquat callus.
B : Rooted plants after 1 month cultivation from A.

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By contrast, the callus mentioned above were placed at 5 temperatures ranging from 15 to 30°C. The optimum temperature for growth was between 20 to 25°C (data not shown, culture conditions were MS medium supplemented with 3% sucrose, 0.25% gellan gum, and a combination of 1.0 mg/*l* of NAA and 0.1 mg/*l* of Zeatin). To increase the frequency of shoot regeneration and to obtain the dwarf plant, more study including detailed phytohormonal combination, temperature condition, prevention of the vitrification of the obtained plants and induction of hairy root for dwarf plant is required.

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