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Micropropagation of *Caladium Bicolor* (Aiton) Vent 'Florida Clown' from Leaf Explants Culture

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Objectives

The aim of this study was to find an efficient, rapid and reliable method for direct plant regeneration using leaf explants of *Caladium bicolor* (Aiton) Vent 'Florida Clown'.

Materials and Methods

1. Plant Materials: Young leaves of *Caladium bicolor* (Aiton) Vent 'Florida Clown' were sterilized by dipping 70% EtOH for 30 s, followed by soaking in 7% calcium hypochlorite for 10 min and rinsing five times in sterile distilled water.
2. Medium and culture conditions: Small pieces of explants (0.5 × 0.5 cm) were cultured either continuously on MS medium containing 0.1 mg/L to 3.0 mg/L 2,4-D/BA or NAA/BA of each, or first cultured at different levels of 2,4-D/BA, and then transferred to MS medium with NAA/BA. Media were adjusted to pH 5.8 prior to adding 0.25% phytigel and autoclaved at 121°C for 15 min. The explants were placed with their abaxial side on the medium. The explants were subcultured at three week intervals. They were cultured in 9-cm petri-dishes (12 explants per dish) on the same medium with 3% sucrose at 25 ± 1°C under a 16 h photoperiod (2,000 Lux) in a growth chamber.

Results and Discussion

1. Callus formation and shoot bud development

Hard, yellow, compact and organogenic callus initiation was only obtained within 4 to 5 weeks on 2,4-D and BA combinations which were tested at concentration ranging from 0.1 mg/L to 3.0 mg/L of each. Differentiation of callus to form adventitious buds or shoot primordia occurred only with young leaf segments on medium containing 0.1 mg/L 2,4-D / 1.0 mg/L BA.

When the differentiated callus derived from leaf explants which had been initiated on 0.1 mg/L 2,4-D and 1.0 mg/L BA were transferred onto medium with NAA and BA, formation of shoots occurred within 2 to 3 weeks. The frequency of shoot formation was 35%. Subculture of these shoots onto MS medium with 0.5 mg/L NAA and 1.0 mg/L BA gave rise to plantlets of normal appearance.

2. Direct plant regeneration from leaf explants

All of the leaf explants tested on MS medium with NAA/BA formed directly shoot buds or shoot primordia. After about five weeks of culture under 0.5 mg/L NAA and 1.0 mg/L BA, the frequency of regeneration was 100% of explants. Seven to eight weeks were required to obtain well-rooted plants, which were mostly able to survive after transfer into soil. From a single young leaf of *Caladium bicolor* (Aiton) Vent 'Florida Clown', 250-300 plants could be regenerated.

This procedure is recommended for its production of homogeneous *Caladium bicolor* (Aiton) Vent 'Florida Clown'.