P 56

Embryogenesis and Plant regeneration from Vinca (*Catharanthus roseus* L.) anther culture

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Objectives

This study was conducted to screen a suitable cultivar and an optimal bud-length for the anther culture, and to establish a protocol for an efficient production of haploid plants.

Materials and methods

Selections from twenty cultivars of *C. roseus* were studied. To identify an optimal developing stage of anther, 2.5, 5, 10 and 15 mm length of flower buds were tested. The buds were surface sterilized with 70% ethanol for 30 sec, then washed several times with sterilized distilled water. The anthers were then transferred on embryogenesis medium containing MS, 1 mg l^{-1} NAA and 0.1 mg l^{-1} Kinetin. Emerging embryos from 5 to 10mm in size were transferred to a solid 1/2 MS medium for regeneration to a plant.

Results and discussions

All tested cultivars showed similar rate of callus induction with variation depending on the bud-length. Fewer callus were induced from anthers of 2.5 mm bud-length (2.3%), while flower buds above 5 mm length showed about 4.9% of callus induction. Embryos were obtained from 7 cultivars out of the 20 cultivars tested. Among them, most embryos were obtained from the anthers above 5 mm bud-length except 'Stardust Mix'. Although 'Little bright Eye' induced an embryogenesis in first 3 months after cultivation, its multiplication rate was slower than that of 'Cooler coconut', 'Cooler grape' and 'Cooler peppermint'. In the case of the latter three cultivars, secondary embryos were rapidly multiplied within 30 days once primary embryo had induced. Regeneration to a green plant from normal embryos is in process after transferring on 1/2 MS medium. In conclusion, cultivars 'Cooler coconut', 'Cooler grape' and 'Cooler peppermint' are proved to be suitable one for the anther culture, and the anthers from more than 5 mm length of flower buds were shown a high regeneration rate.

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