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### Effects of various medium on mass propagation of *in vitro* cultured *Platycodon grandiflorum* with yellow green petals

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#### Abstract

Propagation by crown division in *Platycodon grandiflorum* is too slow for producing many plants in a short time although the plants are uniform. This study was performed to enhance the mass propagation for *Platycodon grandiflorum* containing yellow green petals via various medium compositions and the growth regulators. The nodes containing yellow green petals were used as materials to execute the study with a variety of MS medium concentrations. The 1/4MS medium showed the best development of adventitious root, while the 1/2MS medium exhibited the potential growth. The higher the concentration of sucrose showed the better development and growth of both shoots and adventitious roots. Many adventitious roots were developed at the controlled culture medium at pH 4.8 with a tendency of suppression with higher levels of pH. Also, the cultivated node and leaf explants with the treatments of simple and combined applications with auxin and cytokinin at the 1/4MS culture medium with adding 5% of sucrose were used to identify the influences of growth regulators. The regeneration of plantlets at the 234single application showed a good result with the addition of BA 1 mg·L<sup>-1</sup> and the development and growth of adventitious roots appeared to be good at the addition of NAA 1 mg·L<sup>-1</sup>. For the combined applications, the regeneration of plantlets and the development of adventitious roots were prosperous at the combined applications with BA 0.1 mg·L<sup>-1</sup> and IAA 0.5 mg·L<sup>-1</sup>. The addition of IAA for the leaf explants induced a number of plantlets that showed the potential regeneration, and the highest results was obtained from the combined applications of both BA 1 mg·L<sup>-1</sup> and IAA 2.5 mg·L<sup>-1</sup>. In addition, the development of adventitious roots showed the satisfactory results at the combined application of both BA 1 mg·L<sup>-1</sup> and IAA 0.5 mg·L<sup>-1</sup>.

**Keywords:** organogenesis, adventitious root, mass propagation, regeneration

**Acknowledgements:** This work was supported by Korea Institute of Planning and Evaluation for Technology in Food, Agriculture, Forestry and Fisheries (IPET) through Export Promotion Technology Development Program, funded by Ministry of Agriculture, Food and Rural Affairs (MAFRA) (116121-03-1-HD020)

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