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Medium compositions reveal potential organogenesis in the diploid and tetraploid *Codonopsis lanceolata*

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Abstract

Medium composition plays a key role on influencing organogenesis in plant tissue culture. This study was carried out to examine the effects of medium composition on organogenesis in diploid and tetraploid *Codonopsis lanceolata* and obtain in-vitro mass propagation of superior species of *C. lanceolata*. Diploid *C. lanceolata* was found to be declined regarding MS medium composition for each concentration. However, shoot and adventitious root formation were suppressed with higher mineral salt concentration, and active growth of shoot and adventitious root was exhibited as 4.9 cm and 3.2 cm respectively in 1/2 MS medium. While in tetraploid *C. lanceolata*, it showed 2.9 cm and 3.2 cm respectively in 1/4 MS medium. In the case of sucrose concentration, no consistent decrease was observed for growth of shoot and the adventitious root of diploid both at high and low concentration. The growth of shoot (at 3% concentration) and adventitious root (at 7% concentration) was 2.3 cm and 2.0 cm respectively. Although there was no difference in shoot formation of tetraploid *C. lanceolata* in all concentrations with the range of 1.7~1.8, there was a slight decrease in shoot growth at high concentration. Results revealed that the adventitious root formation was suppressed at high concentration. The concentration of agar exhibited no significant difference in shoot formation of diploid *C. lanceolata* at all concentrations. The maximum result of adventitious growth (4.1 cm) was observed at 0.8% concentration. Slight inhibition of shoot formation and root formation of tetraploid *C. lanceolata* was observed at higher concentration. Shoot formation of diploid *C. lanceolata* also exhibited inhibition at higher concentration. Shoot formation of diploid *C. lanceolata* was increased at lower pH and shoot growth was the highest (2.3 cm) at pH 3.8. Adventitious root formation was higher at lower pH. However, both the adventitious root formation and growth exhibited comparatively higher result at pH 5.8. Taken together, the levels of pH had an effect on shoot and root formation in diploid and tetraploid of *C. lanceolata*.

Keywords: *Codonopsis lanceolata*, organogenesis, medium composition, tetraploid

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