03-2-38

Seed Germination and Mass Production of *in vitro* Seedlings by Multi-shoots in *Dicentra spectabilis* L.

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Objectives

This study was examined to find out the proper treatment of seed dormancy breaking and plant growth regulators and their concentrations on inducing callus, regenerating multi-shoots and roots by *in vitro* immature seed culture as a alternative method for commercial perennial propagation.

Materials and Methods

1. Material: Seeds of *Dicentra spectabilis* L.
2. Methods:

• Seed germination and dormancy breaking
- Stored at 5±2°C in refrigerator after seed harvesting in Jun. 2002
- Treated chemicals like H_2SO_4 etc. on Feb. 13, 2003
- Restored at 5±2°C in refrigerator 2 months more mixed with wet sands
- Three replicates were sowed on Apr. 11, 2003

• Multi-shoots inducement and mass production of in vitro seedlings
- Cultured for 2 months at 15°C with darkness after sowing in MS basic medium
- Transferred at 25±1°C under PPFD 60μM• m-2s-1
- Adding Kinetin, BA, TDZ only and NAA in combination to shoot regeneration
- Adding NAA and IBA for rooting

Results and Discussion

Seed germination was started 1 week later after sowing and finished in 6 weeks. The germination rate of the control was 7.8% but the treatment of H_2SO_4 for 5 min. was 15.8% and increased by 32.1% for 10 min., 47.8% for 40 min. GA_3 treatment at 50ppm was similar to the treatment of H_2SO_4 for 5 min as 15.0%, no big differences in 500ppm GA3 and a little increased in 1,000ppm GA3 as 28.2%. The 1~6% of NaClO treatments were 16.5~22.8% as 2, 3 times as the control. The germination rate of 0.1% KNO_3 was similar to the control and a little increased by higher concentrations. Kinetin and xylene treatment were inhibited seed germination. The highest callus formation through seeds was 10.1% on the MS medium containing 0.1mg/L NAA + 1.0mg/L BA although there was no remarkably different among the treatments. There was no callus formation in MS medium supplemented with 0.1 mg/L 2,4-D + 1.0 mg/L BA. Multi-shoots were achieved on the MS medium added with 2.0 mg/L Kinetin, 1.0 mg/L BA alone and combination of 0.1 mg/L NAA and 2.0 mg/L Kinetin or 1.0, 2.0 mg/L BA without root formation. Particularly when cultured on MS medium with 0.1 mg/L NAA and BA 0.5 mg/L, the shoot growth was vigorous even if fewer shoots regenerated. Kinetin and BA were more effective than TDZ treatment for shoot regeneration. The multi-shoots were rooted well when placed on MS medium containing 0.1, 0.3 mg/L NAA and IBA treatment was less effective for rooting.

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