

Cryopreservation of Winter Buds of Herbaceous Peony (*Paeonia lactiflora* Pall.) by Encapsulation-dehydration

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Objective

Our objectives were to determine a more simple and reliable protocol for cryopreservation of winter buds using encapsulation-dehydration in herbaceous peony.

Materials and Methods

- o. Plant materials : Winter buds of herbaceous peony (*Paeonia lactiflora* Pall.)
- o. Methods
 - 1) Pretreatment
 - o. Encapsulation-dehydration : encapsulation into 3% alginate-gel bead→desiccation by air drying for 5h→cryopreservation and thawing→culture
 - 2) Desiccation by air drying for 5h→put in 1, 2, 5, 15ml cryovials→cryopreservation→thawing in 40°C water bath for 5min→culture

Results and Discussion

Winter buds of herbaceous peony were successfully cryopreserved using the encapsulation-dehydration technique. The highest survival rate(88.0%) of cryopreserved winter buds was achieved when the encapsulated winter buds were hydrated for 5h by air drying. The survival rate of the winter buds cryopreserved by vitrification showed relatively low level of 60%. This encapsulation protocol using dormant winter buds appears to be promising as a method for the long-term conservation of herbaceous peony.

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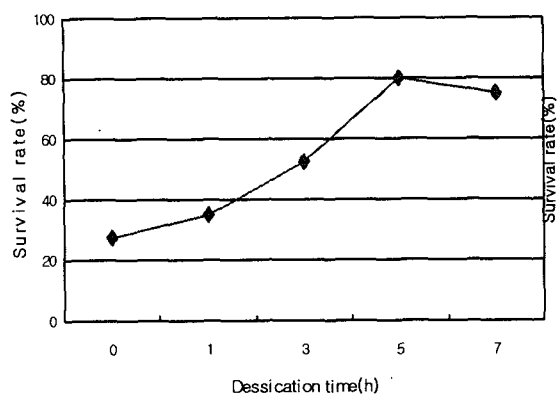


Figure 1. Effect of desiccation on the survival of cryopreserved winter buds in herbaceous peony.

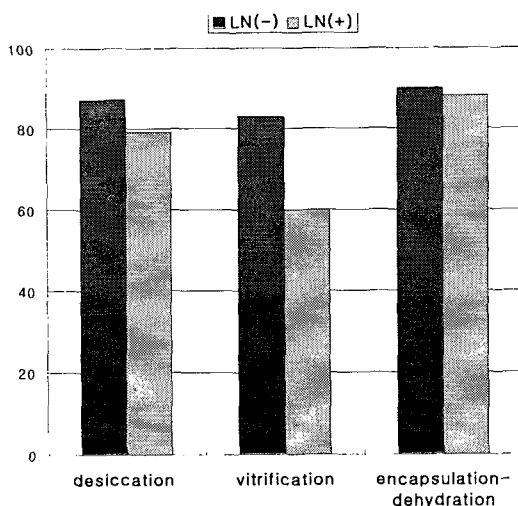


Figure 2. Effect of desiccation, vitrification and encapsulation-dehydration on cryopreservation of winter buds in herbaceous peony.

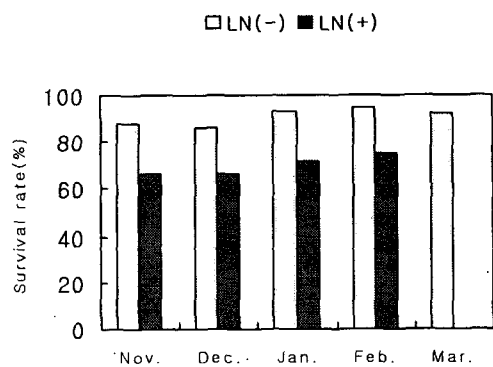


Figure 3. Seasonal variation in survival rate of cryopreserved winter buds.

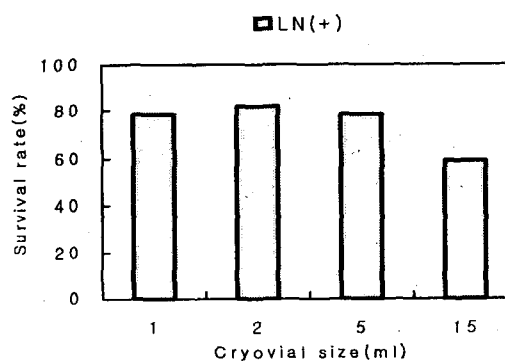


Figure 4. Changes in survival rate of cryopreserved winter buds according to cryovial size.



Figure 5. Shoot regeneration from cryopreserved winter buds by desiccation(A), vitrification(B) and encapsulation-dehydration(C).