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Practical Application of Cryopreservation of In Vitro Grown Shoot Tips of Strawberry (*Fragaria x ananassa* Duch.) using Droplet-Vitrification

Jinjoo Bae[1], Young-Yi Lee[2]*, Jae-Young Song[1], Jung-Ro Lee[3] and Munsup Yoon[3]

[1]Post doctor, [2]Researcher and [3]Senior Researcher, National Agrobiodiversity Center, NAS, RDA, Suwon 16613, Korea

Cryopreservation has been broadly used as an efficient method for a long-term conservation for many types of plants especially vegetatively propagated plants. Among several cryopreservation methods, a droplet-vitrification was the most widely applicable and efficient method. Studies have developed protocols for strawberry using droplet-vitrification method and suggested the practical use of the protocol for large number of germplasm with a little modification. In this study, the droplet vitrification method of shoot tip has been tested on 31 accessions provided around the world. Shoot tips were precultured on Murashige and Skoog (MS) liquid medium supplemented with 0.3~0.5M sucrose. Precultured explants were osmoprotected with loading solution, 35% of PVS3 (C4, 17.5% glycerol and 17.5% sucrose) for 40 min and exposed to dehydration solution, PVS3 (B1, 50% glycerol and 50% sucrose) for 60 min. Then, the explants were transferred onto droplets containing 2.5 uL PVS3 on sterilized aluminum foils prior to direct immersion in liquid nitrogen (LN) for 1hr. The cryopreserved shoot tips were rapidly warmed in a water bath at 40C and then unloaded in MS with 0.8M sucrose for 40 min. The shoot tips were cultured in NH_4NO_3-free MS post culture medium for 2 weeks. Subsequently, the explants were moved to the MS medium for 6 weeks and evaluated the regrowth rate. By this droplet-vitrification protocol, twenty-four accessions showed at least 40% regrowth rate. Out of 24 accessions, ‘Nonsan1ho’ had the highest regeneration rate of 85.8% and ‘Jumbo pureberry’ had the lowest with 42.1%.

Key words: Cryopreservation, Droplet Vitrification, Strawberry

*(Corresponding author) youngyi@korea.kr, Tel: +82-31-299-1804