

## P 29 Dormancy Induction of Somatic Embryos of Siberian Ginseng by High Sucrose Enhances the Conservation of Hydrated Artificial Seeds and Dehydration Resistance

JEONG, Jae-Hun · CHOI, Yong Eui\*

Korea Ginseng Institute, Chung-Ang University, Ansung-shi, 456-756, Kyunggi-do, South Korea

### Objectives

We reported that artificial induction of dormancy in somatic embryos by high sucrose treatment increased desiccation tolerance and long-term conservation of alginate capsules without germination.

### Materials and Methods

1. Plant materials: Embryogenic cells of Siberian ginseng (*Eleutherococcus senticosus* Harms)
2. Somatic embryo induction: Embryogenic cells of Siberian ginseng was induced from excised zygotic embryos by Choi et al.. Embryogenic cells were maintained in MS liquid medium with 3% sucrose and 1.0 mg/l 2,4-D in 250 ml Erlenmeyer flask in subculture at two-week intervals.
3. Treatment of high sucrose: 1, 3, 6, and 9% sucrose. No. of samples - 100 embryos.
4. ABA analysis: ABA was extracted from somatic embryos treated with 3% and 9% sucrose as described by Mertens et al. Competitive ELISA analysis was performed to quantify endogenous ABA, and the procedures given by Phytodetek - ABA kit for the ABA ELISA were followed. Standard curves were generated using a racemic mixture of ( $\pm$ ) cis/trans ABA.

### Results and Discussion

1. Induction of dormancy in somatic embryos by high sucrose : Early cotyledonary embryos gathered from the bioreactor were plated on MS solid medium with 1, 3, 6 and 9% sucrose for one month. The germination process was highly dependent on the level of sucrose treatment. At 1% sucrose, 97% of the somatic embryos matured to green cotyledonary embryos and germinated without any resting event. At 9% sucrose, embryos were opaque-white in color and did not germinate after mature.
2. ABA analysis : Since induction of dormancy in zygotic embryos was related to the accumulation of endogenous ABA, endogenous ABA content in somatic embryos of *E. senticosus* treated with 3 and 9% sucrose was analyzed. The content of endogenous ABA (487.8 ng/g fw) was approximately double in the somatic embryo treated with 9% sucrose than the ones (258.4 ng/g fw) treated with 3% sucrose. The above results indicate that high osmotic treatment might stimulate somatic embryos of *E. senticosus* into dormancy. Similar dormant phenomenon manifested by direct somatic embryos in *Panax ginseng* was reported when high sucrose treatment was applied.