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# Expression of *Escherichia coli* heat-labile enterotoxin B subunit (LTB) in the fresh and dry somatic embryos of Siberian ginseng

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## Objectives

The present study reports that *E. coli* heat-labile enterotoxin B subunit (LTB) was transformed to Siberian ginseng using *Agrobacterium*-mediated transformation, and embryogenic cell strains in airlift bioreactors were used to produce somatic embryos in a large quantity. After potent transformed somatic embryos were produced, the embryos were dried. We analyzed the LTB expression and GM1-ganglioside binding for the fresh and dry somatic embryos.

## Materials and Methods

1. Materials

- Transgenic somatic embryos of Siberian ginseng
- *Agrobacterium* strain : LBA4404

Plasmid pMYO111 containing synthetic LTB gene under the control of ubiquitin promoter

2. Methods

Bioreactor culture, Fresh somatic embryos, Dry somatic embryos, PCR analysis, Northern blot analysis, Immunblot detection of LTB protein, Quantification of LTB protein level, GM1-ganglioside binding assay

## Results and Discussion

For edible vaccine development, stability of antigens over time in processed food products stored at different temperatures need to be assured. The B subunit of *Escherichia coli* heat-labile toxin (LTB) was synthesized in the transgenic somatic embryos of Siberian ginseng by *Agrobacterium*-mediated transformation. After drying the transgenic somatic embryos, we confirmed that it contained approximately 0.38% LTB of the total soluble protein. The somatic embryo-synthesized LTB showed to be stable, even when stored at room temperature for a month, indicating that the potential of removing the need for a cold chain during storage and distribution.

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