

**P 61** Early and Transient Induction of Soybean L-asparaginase and Metalloproteinase Genes during Low Temperature Stress

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**Objectives**

L-asparaginase is an amidase that converts L-asparagine to L-aspartic acid and ammonia, and plays an important role in nitrogen metabolism in plants. It also have a role in biosynthesis of amino acids and nodulation process in legumes.

Plant metalloproteinase belong to the MMPs family and MMPs are involved in remodeling of plant extracellular matrix in association with plant growth, development, and possibly defense processes.

In this study, we report low temperature-inducible L-asparaginase and metalloproteinase isolated by suppression subtractive hybridization (SSH) from soybean.

**Materials and Methods**

- 1. Materials - Plant: *Glycin max* cv. sinpaldal2, 3-4 weeks-old plants
- 2. Methods

- low temperature treatment: Incubating 5 °C chamber with light supply.
- SSH, RACE, southern blot, northern blot analysis

**Results and discussions**

The full length cDNA of L-asparaginase, SLTI182 and the full length cDNA of metalloproteinase, SLTI114 are 1258 bp long and 1225 bp long, respectively.

The induction of SLTI182 and SLTI114 are restricted to the early period of low temperature stress, whereas SLTI25 is restricted to the lately period of low temperature stress and SLTI66 is continuously accumulated during low temperature stress.

The expression of SLTI182 and SLTI114 during low temperature stress started to increase 3 hour after treatment, reached the maximum at 6 hour, and then decreased to the initial level at 48 hour. During deacclimation, the expression of SLTI182 increased again but the expression of SLTI114 remained unchanged.

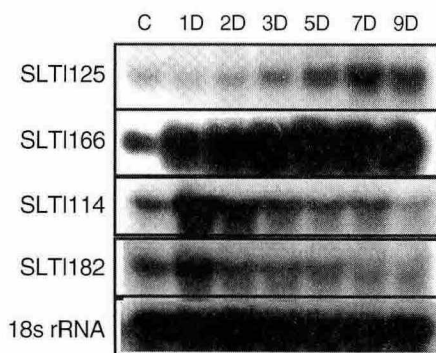


Figure 1. northern analysis of LT stress

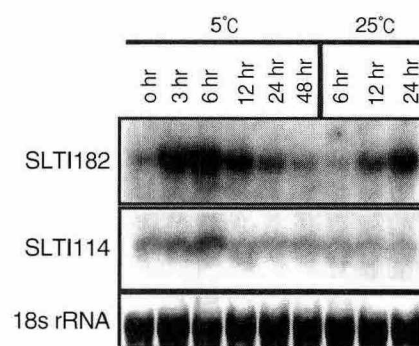


Figure 2. northern analysis during 5°C and 25°C

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