## A6. Isolation of cDNA encoding low temperature-inducible L-asparaginase from soybean

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## **Objectives**

l-asparaginase mediates the conversion of asparagine into asparate and ammonia and play an important role in nitrogen metabolism in plants. It also have a role in biosynthesis of amino acids and nodulation process in legumes. In this study, we report low temperature-inducible l-asparaginase isolated by suppression subtractive hybridization (SSH) from soybean.

## Materials and Methods

Materials - Plant : *Glycin max* cv. sinpaldal2, 3~4 weeks-old plants Methods - low temperature treatment: Incubating 5 °C chamber with light suply.

SSH, RACE, southern blot, northern blot analysis

## Results and discussions

The full length cDNA of I-asparaginase, GmASP1 is 1258 bp long and contains an open reading frame consisted of 326 amino acids (Fig.1). GmASP1 protein showed the highest identity (84 %) with putative asparaginase from *A. thaliana* (AB012247), but it showed only 55 % identity with another isoform of *A. tathaliana* (Z34884). The expression of GmASP1 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 (Fig 2). Present study suggests that *slti182* may function to accelerate the protein synthesis which is important in the early response to low temperature.

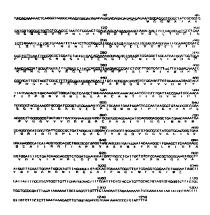


그림 1 The nucleotide sequence of GmASP1

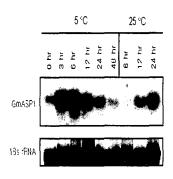


그림 2 Northern blot analysis of GmASP1

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