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Molecular Cloning of Light-inducible Beta-amyrin Synthase Gene from Soyben

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Objectives

Saponins have been found to possess many biological properties, including hypocholesterolemic, immune-stimulatory, and anti-tumorigenic activity. Aglycons of soyasaponins are derivatives of β-amyrin, a kind of triterpene. In this study, we report to increase the soyasaponin by hairy root culture, the growth of soybeen hairy root were investigated in various culture conditions.

Materials and Methods

1. Materials - Plant: *Glycin max* cv. sinpaldal2, for SSH, 3-4 weeks-old plants, and for northern blotting, 5 day-old, dark grown seedlings were used.
2. Methods - wound treatment: punching all expanded leaves by 2-3 holes.

SSH, RACE, southern blot, northern blot analysis, fluorescence *in situ* hybridization

Results and discussions

From SSH clones, we identified a cDNA clone (gmwi33) showing high homology with β-amyrin synthases. Using RACE PCR, we isolate full-length cDNA of gmwi33, designated *GmAMS1*. *GmAMS1* is 2416 bp in length and has an ORF composed of 739 amino acids. Northern analysis showed that *GmAMS1* is highly induced by light and weakly induced by methyl jasmonate and low temperature, whereas it was not induced by elicitor or UV-B treatment (Figure 1). Fluorescence in situ hybridization and northern blot analysis showed that soybean genome carry two copy of GmAMS1 gene (Figure 2).

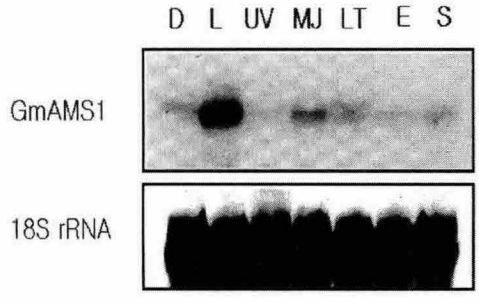

Figure 1. Northern analysis of GmAMS1 in dark-grown seedling

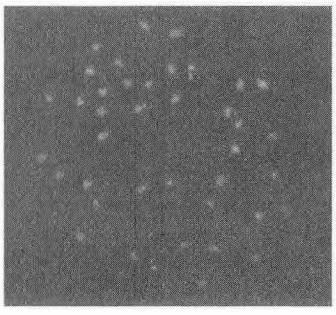

Figure 2. Chromosome location of *GmAMS1* using FISH

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