

Expression Pattern of Isoflavone Synthase Genes in Soybean Plant

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Objectives

We have traced the expression pattern of two isoflavone synthase genes, named IFS1 and IFS2 to have comprehensive understanding on regulation of this key enzyme which initiate in building up basal structure of various isoflavonoids.

Material and Methods

We used a transgenic soybean line which has IFS2 promoter::GUS gene construct pWSJ004 to observe expression pattern of isoflavone synthase gene in soybean plant. GUS staining has done with leaf and root of transgenic soybean plant.

Results and Discussion

During the last decades more than 3600 scientific data regarding the synthesis of isoflavones and their medicinal effects have been reported. Isoflavone synthesis in soybean plant is rather complicate than we have expected because it follows quantitative inheritance pattern and response sensitively to the environmental stimuli. Therefore, chasing isoflavone synthesis mechanism with traditional biochemical and molecular biological approaches usually concluded in an unclear interpretation. We used a transgenic soybean line which previously developed by DuPont scientists to observe the intact expression pattern of isoflavone synthase gene in soybean plant. The vegetative and reproductive growth of this transgenic soybean line were normal. We couldn't see any recognizable growth defect during the all growth stages. As pilot experiment, we examined IFS2 gene expression in untreated soybean leaf and root of 4 weeks old plants. We observe basal level of GUS gene expression in leaf but regionally strong expression of IFS2 gene in root.

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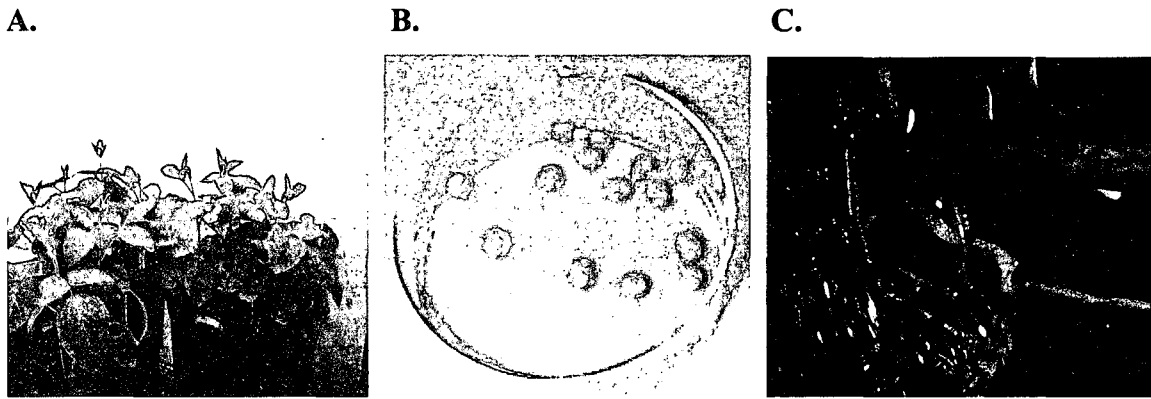


Figure 1. Growth and gus staining result of a transgenic soybean line which has pWSJ004. The promoter of isoflavone synthase 2 (IFS2) gene of soybean was attached on GUS gene. Overall, phases of growth of this transgenic soybean line were quite normal. Panel A. Four weeks old transgenic soybean plants. Panel B. Transgenic soybean seeds. Panel C. GUS staining of transgenic soybean roots obtained from 4 weeks old plant. GUS staining was detected in major lateral roots (Panel C) and root hairs (data not shown).