



***Agrobacterium*-mediated transformation of the β -subunit gene in 7S globulin protein in soybean using RNAi technology**

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ABSTRACT. The objective of this study was to use RNA interference (RNAi) to improve protein quality and decrease anti-nutritional effects in soybean. *Agrobacterium tumefaciens*-mediated transformation was conducted using RNAi and an expression vector containing the 7S globulin β -subunit gene. The *BAR* gene was used as the selective marker and cotyledonary nodes of soybean genotype Jinong 27 were chosen as explant material. Regenerated plants were detected by molecular biology techniques. Transformation of the β -subunit gene in the 7S protein was detected by PCR, Southern blot, and q-PCR. Positive plants (10 T₀, and 6 T₁, and 13 T₂) were tested by PCR. Hybridization bands were detected by Southern blot analysis in two of the T₁ transgenic plants. RNAi expression vectors containing the soybean 7S protein β -subunit gene were successfully integrated into the genome of transgenic plants. qRT-PCR analysis in soybean seeds showed a clear decrease in expression of the soybean β -subunit gene. The level of 7S

protein *β-subunit* expression in transgenic plants decreased by 77.5% as compared to that of the wild-type plants. This study has established a basis for the application of RNAi to improve the anti-nutritional effects of soybean.

Key words: *β*-subunit gene; RNAi expression vector; Soybean; *Agrobacterium* mediated