

## **Abstract**

Gene transformation and production of transgenic plants has special importance. Development of suitable, fast, easy and efficient method to transfer genes into plants is one of the aims of genetic scientists. Gene transfer to plants performs to evaluate the transient and permanent gene expression. Transient expression is quick, easy and simple and is not influenced by position effect compare to the permanent expression. Overall, techniques for plant gene transformation could be divided into direct and indirect methods which biolistic and *Agrobacterium*-mediated gene transfer method are among the most applied methods. Due to the advantages of *Agrobacterium*-mediated gene transfer methods, including simple, inexpensive, accurate and being natural, in this study, development of a new method of *Agrobacterium*-mediated gene transfer to plants through the wooden vessel and transient expression of *GUS* reporter gene was investigated. Hence pCAMBIA1305.2 plasmid harbouring Intron-*GUS* reporter gene was transferred to the melon mildew Zabol (*Cucumis melo*), parsley (*Petroselinum crispum*) and pinto beans (*Phaseolus vulgaris*) using *Agrobacterium*.

The results of PCR and Immunohistochemical *GUS* assay showed successful gene transfer to the plants. The established method requires simple facilities and easily performs, hence, it could be replaced with other methods of *Agrobacterium*-mediated gene transfer to plants.

**Key words:** *Agrobacterium*, *GUS* reporter gene, pCAMBIA1305.2 plasmid, *Cucumis melo*, *Petroselinum crispum*, *Phaseolus vulgaris*



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