

Evaluation on fungal diseases resistance of transgenic *Eustoma grandiflorum* expressing foreign antifungal protein (AFP3)

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ABSTRACT

Taiwan is located in subtropical and tropical regions, crop diverse and complex. In recent year, *Eustoma* is one of rapid development cut flower. Fungal diseases make a great lose that the production of *Eustoma grandiflorum*. This study hopes to use genetically modified strategy to fight against disease, to reduce the environmental damage caused by the use of pesticides of concern, the strategy of strengthening the use of transgenic pest-resistant characteristics of plants is indeed a good strategy. Transformation vector of anti-fungal protein gene from *Carica papaya* L. Cp-AFP3 was provided by Dr. Xiao. The amino acid sequence alignment, found that its structure is similar to plant defensins (AFP3). This study has construct 8 Transgenic *Eustoma grandiflorum* lines. By polymerase chain reaction, Southern blot analysis did show anti-fungal protein into the chromosome of *Eustoma grandiflorum*. Use *Rhizoctonia solani* and *Sclerotium rolfsii* to inoculate non-transgenic *Eustoma grandiflorum* and transgenic *Eustoma grandiflorum* lines. The results showed that four days after inoculation, non-transgenic modified plants produce symptoms or become ill have been killed, but the transgenic *Eustoma grandiflorum* line 1, line 8, line14 and line 17 is to show a high degree of resistance to *Rhizoctonia solani*, has not infected more than 50% , while the line 17 is more than 70% were not symptoms of the disease, but the high degree of resistance against *Rhizoctonia solani* of plants inoculated with pathogen *Sclerotium rolfsii* and after the experiment results also consistent with the above, the rest of the transgenic plants compared with non-transgenic plants more, there are also better resistance. Protein analysis on Western Blotting also found that the protein GFP reporter gene expression. The fungal infection *Eustoma grandiflorum* variety, so in order to *Rhizoctonia solani* and *Sclerotium rolfsii* disease vaccination assessment, will continue to other types of fungi initial tests.

Keywords : anti-fungal protein、 transgenic *Eustoma grandiflorum*、 *Rhizoctonia solani*、 *Sclerotium rolfsii*

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