

Transcriptional activation of anthocyanin structural genes in torenia cv. Kauai rose by overexpression of anthocyanin regulatory transcription factors

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Abstract

This study was conducted to examine the role of the transcription factors (TFs) (RsMYB1 and mPAP1+B-Peru) in the regulation of anthocyanin biosynthesis in the ornamental torenia cv. Kauai rose. In this study, we could produce several putative transgenic lines overexpressing the TFs via *Agrobacterium*-mediated transformation, and presence of the TFs in the randomly selected five transgenic lines was confirmed using polymerase chain reaction (PCR). According to results of reverse transcription-PCR analysis (RT-PCR), the expression of the TFs in all transgenic lines and of the anthocyanin structural genes (*CHS*, *F3H*, *DFR*, and *ANS*) in all transgenic lines and WT plants were distinctly detectable. However, transcript levels of the structural genes expressed in the transgenic lines overexpressing TFs were significantly higher than those expressed in WT plants. Therefore, it is suggested that anthocyanin content in flowers of the transgenic torenia would be significantly higher than that in flowers of WT plants. Moreover, these results indicate that the TFs (RsMYB1 and mPAP1+B-Peru) could be exploited as potential anthocyanin regulatory TFs to enhance anthocyanin content in the other horticultural plants.

Key words: Torenia, RsMYB, mPAP1+B-Peru, Anthocyanin