

**Title :** Cloning of the *ethylene-responsive transcription factor 2-like* gene from Thai longan varieties with different flowering behaviors.

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## ABSTRACT

Longan (*Dimocarpus longan*) is an economically important fruit crop in Thailand. The cultivar ‘E-Daw’ is the most widely cultivated variety due to its fruit flavor and quality. However, this cultivar requires specific environmental conditions or chemical induction with potassium chlorate (KClO<sub>3</sub>) to induce flowering. Therefore, investigating genes involved in flowering regulation represents a promising approach to enhance longan production potential. The aim of this study was to construct the recombinant DNA to examine the effects of overexpression of an *ethylene-responsive transcription factor 2-like* (*ERT*) gene in a model plant, as this gene is likely involved in regulating longan flowering. The *ERT* gene was amplified from two longan cultivars exhibiting distinct flowering behaviors: the natural-independent flowering (“Thao”) and continuous flowering (“Phetsakorn”). The amplified *ERT* fragments were ligated into the two types of plasmids, pBlueScript II SK (+) and pGFPGUSPlus vector (Addgene #64401) for sequence verification and overexpression construct development for gene transfer into a model plant system, respectively. The

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result demonstrated the successful construction of *ERT* genes inserts in pBlueScript II SK (+) plasmid, comprising three and two positive clones from ‘Thao’ and ‘Phetsakorn’, respectively, all of which showed nucleotide sequences consistent with database references. In addition, one positive *ERT* clone from ‘Phetsakorn’ cultivar was successfully subcloned into the pGFPGUSPlus overexpression vector and submitted for nucleotide sequencing. The recombinant DNA constructs generated in this study will be further used to investigate the role of *ERT* in regulating flowering behavior in a model plant system. The findings provide essential baseline information for advancing genetic knowledge of longan and supporting future breeding efforts to improve longan production efficiency.

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