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# ISOLATION, CHARACTERIZATION OF A FRUIT SPECIFIC PROMOTER SEQUENCE OF A THAUMATIN GENE CODING FOR FRUIT RIPENING PROTEIN DIFFERENTIALLY EXPRESSED IN STORAGE FRUIT

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## ABSTRACT

Most proteins are tasteless and flavorless, while some proteins elicit a sweet-taste on the human palate. Thaumatin is one of the most potently sweet properties, are derived from a plant in tropical Africa and elicit a sweet taste response at a concentration approximately 100,000 fold higher than of sucrose on a molar basis. The biotechnological production of sweet protein would provide valuable information on the mechanism underlying the elicitation of sweetness in protein as well as the interaction between sweet-tasting protein and their putative receptors. Transgenic technologies can be useful for increasing its sweetening value and its expression in other plant having low sweetening value. However, tissue-specific promoters that guarantee correct expression of transgenes would be necessary. We used polymerase chain reaction to isolate a promoter sequence of the *thaumatin* gene coding for fruit ripening protein differentially expressed in storage fruit. *In silico* analysis revealed putative *cis*-acting regulatory elements within this promoter sequence, including fruit-specific elements that may be required for its expression in vascular tissues. Transient expression experiments showed that the *thaumatin* promoter is functional, since this sequence was able to drive GUS expression in grapes fruit. Results from our computational analysis can serve as a guide for functional experiments to identify regions with tissue-specific *thaumatin* promoter activity. The DNA sequence that we identified is a new promoter that could be a candidate for genetic engineering of different fruit yielding plant.

**Keywords: *Thaumatin*, Fruit Ripening Protein, *In silico* Analysis, Polymerase Chain Reaction, Fruit Specific Promoter, Transient Expression**