

Title The R2R3-MYB transcription factor, GmMYB10, regulate the anthocyanin biosynthesis in mangosteen fruit during ripening and after harvest

Author Yossapol Palapol, Saichol Ketsa, Andrew. C. Allan and Ian. B. Ferguson

Citation Abstracts Book, 6th International Postharvest symposium, 8-12 April 2009, Antalya, Turkey. 256 pages.

Keyword Anthocyanin; biosynthesis; mangosteen

Abstract

Most of fruit generally develop their colour on the tree. Mangosteen fruit have unique red colour development that found both on tree and after harvest (off tree) causing anthocyanin accumulation. Here we characterized three full-length cDNAs mangosteen MYB transcription factor (GmMYB1, GmMYB7 and GmMYB10) and all biosynthetic genes (GmPal to GmUFGT). Analysis of protein R2R3-MYB transcription factor family displays similarity with production of anthocyanin pigment1 in Arabidopsis (AtPAP1) and other sequences in several plants related to anthocyanin pigmentation that fall into subgroup 10, called GmMYB10. In transient expression, only GmMYB10, co-expression with AtbHLH2, activated strongly the GmDFR promoter as well as the AtDFR promoter which were similar to AtPAP1 infiltration. GmMYB10 and GmUFGT were highly abundant with onset of pigmentation and expressed redundantly with red colouration. The GmMYB10 and GmUFGT transcript levels correlated closely with total anthocyanin content and two major of anthocyanin compound including cyanidin-3-sophoroside and cyanidin-3-glucoside. The results suggest that GmMYB10 plays a role and specific to regulation of anthocyanin biosynthesis both on tree and after harvest and GmUFGT may be a key biosynthetic gene in mangosteen pigmentation.