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Differential expression of cherry MYB10 in white and red varieties is responsible for anthocyanin levels

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Abstract:

Fruit colour is a key trait in sweet cherry as it is a main determinant of fruit quality. Fruit and flower color in other rosaceous species is caused by anthocyanin accumulation, which is regulated by transcriptional factors of the anthocyanin biosynthetic pathway. In sweet cherry a transcription factor, MYB10, has been cloned. This transcription factor correlates with anthocyanin production during sweet cherry development and co-localizes with a major QTL for cherry fruit colour. In this work, we studied MYB10 transcription, structure and function in a sweet cherry cultivar that produces white fruits, and in three cultivars with different red fruits. Results revealed a lack of MYB10 transcription in white sweet cherries and a large insertion in one allele of the MYB10 genomic sequence. We postulate that this mutation and slight differences in promoter sequence of MYB10 result in low expression of this gene in the white cultivar, confirming that MYB10 is a major determinant of fruit color in sweet cherry.

Keywords: *Prunus avium*, colour