

Supplementary Material

***CaPSY1* gene plays likely the key role in carotenoid metabolism of pepper (*Capsicum annuum*) at ripening**

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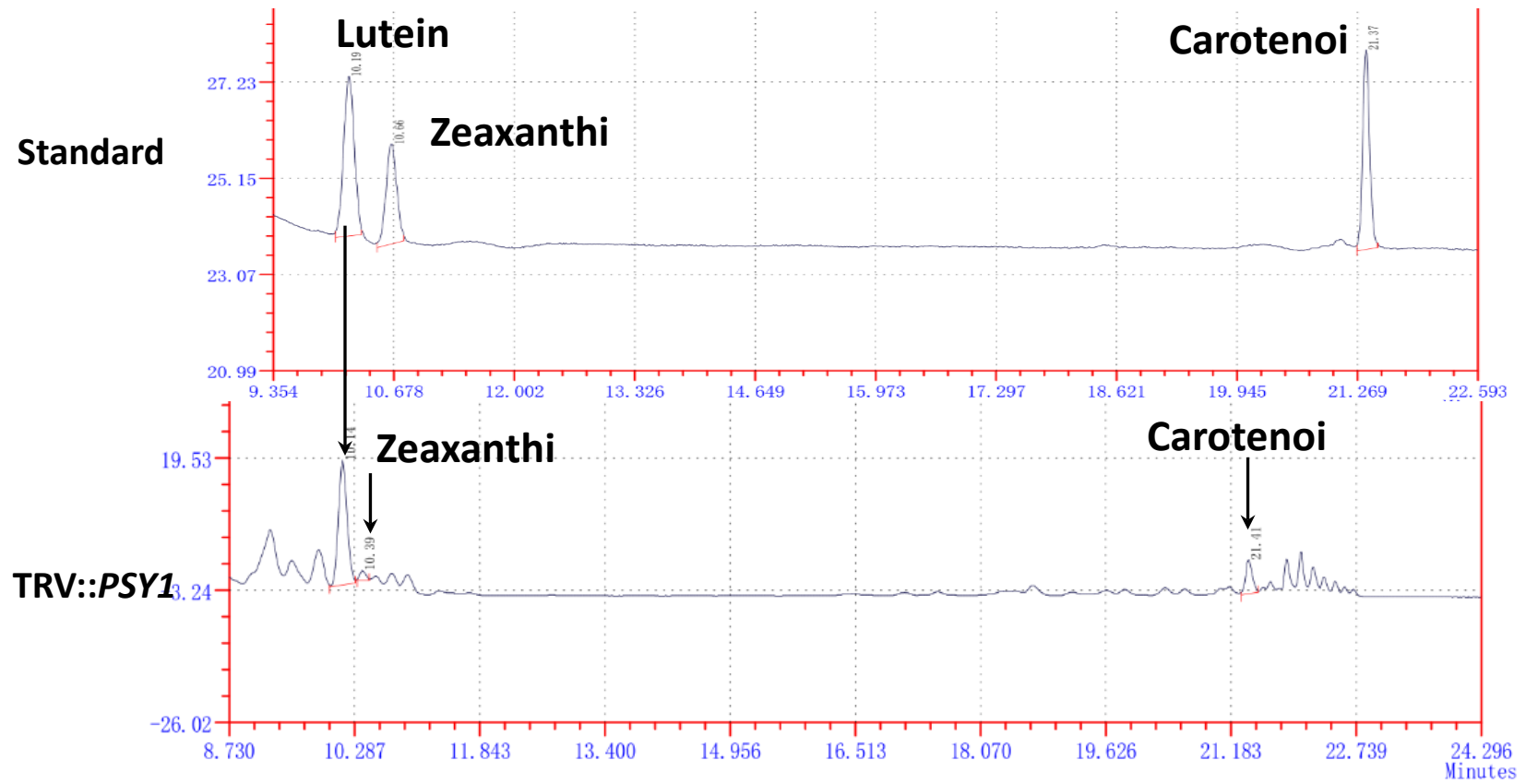


Fig. S1. HPLC peaks regarding lutein, zeaxanthin and carotenoid content in TRV::PSY1 fruits of pepper in compared to standard sample. Arrows indicate the lutein, zeaxanthin and carotenoid TRV::PSY1 fruits.

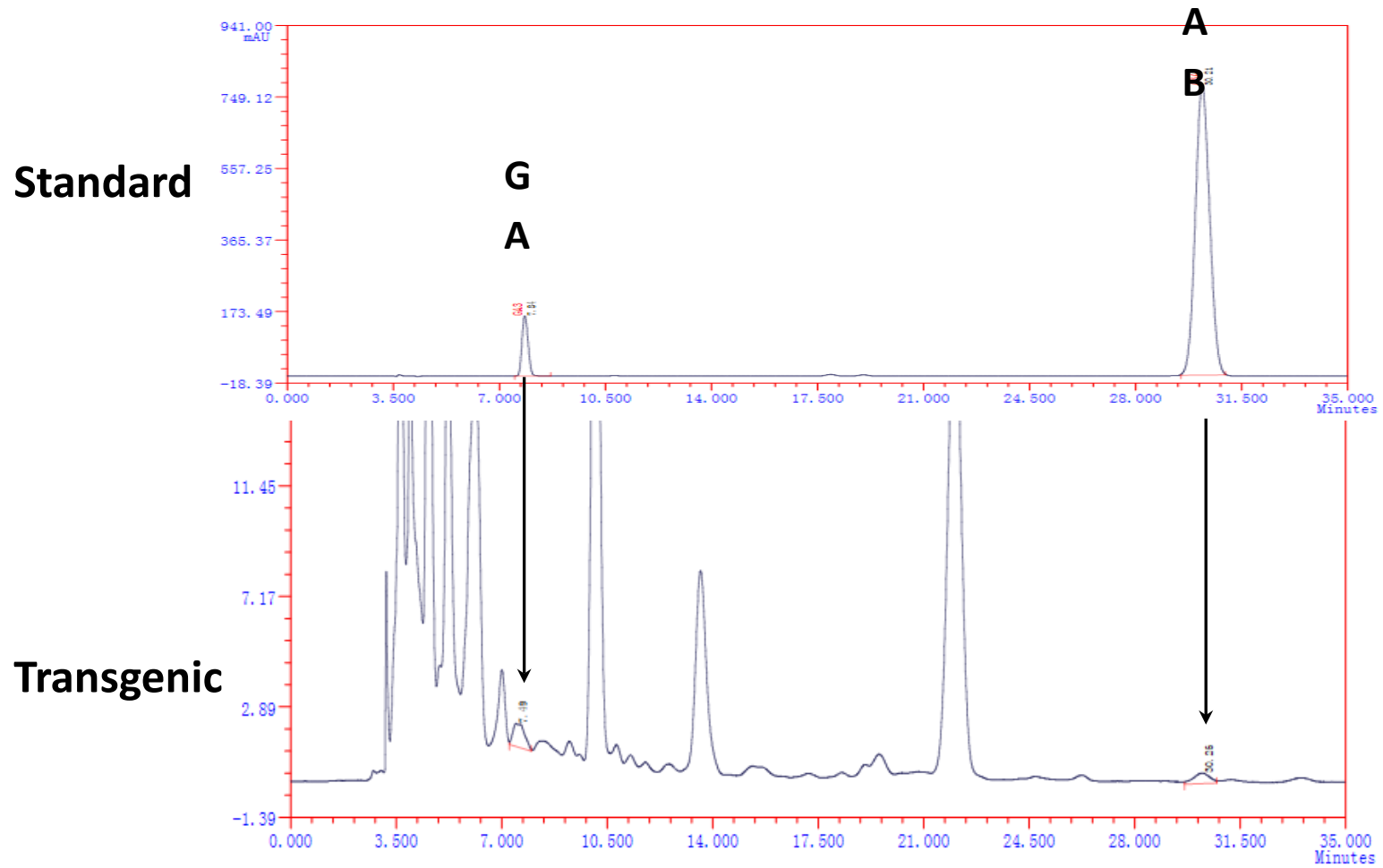


Fig. S2. HPLC peaks regarding GA3 and ABA content in transgenic *A. thaliana* line in compared to standard sample. Arrows indicate the GA3 and ABA peaks in transgenic line.

Table S1. List of the primers used in this experiment

Gene name	Sequence (5' > 3')	Application	
<i>CaPSYIF</i>	GACCGTGA ACTCCGCTTGTATC	qPCR for <i>CaPSY1</i>	
<i>CaPSYIR</i>	AGCCAAGTGC GGAGTGAATAAC		
<i>CaPSY2F</i>	TGGAGAAATGGCTGTGTCA		qPCR for <i>CaPSY2</i>
<i>CaPSY2R</i>	CTGCACATACTTCGCCACAA		
<i>CaPSY3F</i>	GACGGAATGAGAATGGACACG		qPCR for <i>CaPSY3</i>
<i>CaPSY3R</i>	TATGCCCAAATGAAGTGCTGC		
<i>TRV::PSYIF</i>	GGGGTACCCCTGTGCAGAGTACGCAAAGACG	VIGS RT-PCR primer for <i>CaPSY</i> gene	
<i>TRV::PSYIR</i>	GGAATTCCGCGATGCCATAATTGGAAC		
<i>TRVIF</i>	GTAGGAGGAAGAGACCGAAG	TRV1 virus vector checking by RT-PCR	
<i>TRVIR</i>	TAGTCGAATCAGTAGCAACC		
<i>TRV2F</i>	GTATGTCAGTGATCGCAGTAG	TRV2 virus vector checking by RT-PCR	
<i>TRV2R</i>	CGTCCGTTTAGACGCTTGCGTAGG		
<i>CaUBQF</i>	GTCCATCTGCTCTCTGTTG	References gene for RT-PCR and qPCR	
<i>CaUBQR</i>	CACCCCAAGCACAATAAGAC		
<i>TRV::LCYbF</i>	TTACTATTCAGGCGACAGTGGTG	VIGS qPCR primer for <i>CaLCYb</i> gene	
<i>TRV::LCYbR</i>	CGTTGTTCTTCAAATGAGAGTCG	VIGS qPCR primer for <i>CaCCS</i> gene	
<i>TRV::CCSF</i>	GTTATGGCTATTGGTGGGACTTC		
<i>TRV::CCSR</i>	ACAAAGTCTCCATTCCGAAACAA	VIGS qPCR primer for <i>CaCrtz</i> gene	
<i>TRV::CrtZF</i>	GGGGATTACTTCTATGGCGGTTA		
<i>TRV::CrtZR</i>	CTTGGTCTATGGTGTGACTCGTG	VIGS qPCR primer for <i>CaGGPS</i> gene	
<i>TRV::GGPSF</i>	GTACACAAAACGGCAGCTCTCC		
<i>TRV::GGPSR</i>	ACAACCAAATCTTTCCAGCAG		
<i>CaPSYIF-BP</i>	GGGGACAAGTTTGTACAAAAAAGCAGGCTGACCGTGA ACTCCGCTTGTATC	Over-expression primer for <i>CaPSY1</i>	
<i>CaPSYIR-BP</i>	GGGGACCACTTTGTACAAGAAAGCTGGGTAAACTGGTGAAAGTGGGAGATTGT		
<i>AtActinF</i>	GAATCGCCGACAGAATGA	qPCR primers for reference gene	
<i>AtActinR</i>	TACTGAGGGAGGCCAAGA		
<i>AtPSYIF</i>	TGCTACTACGTCGCTGGAAC	qPCR primers for carotenoid biosynthetic pathway gene	
<i>AtPSYIR</i>	AGACCAGCCTGAGCCAATTC		

<i>AtLCYbF</i>	TGAAGAGGATTGAGGAAGACGAG	
<i>AtLCYbR</i>	TGAACCGAGGTATCTCACAATGG	
<i>AtCrtZF</i>	GATGACAACAAACCAGAAAGCAC	
<i>AtCrtZR</i>	GACTTTCACCTCCCTTCATTTG	
<i>AtGGPSF</i>	TTAGTGGCGGGTCAAGTCGT	
<i>AtGGPSR</i>	ATCATCACTTCCCTCCACCAACAA	
<i>AtCHLGF</i>	TTCAGGGAAC TTTCATTGGACC	qPCR primers for chlorophyll biosynthetic pathway gene
<i>AtCHLGR</i>	ACCTCCCAATAATAGCACCCAG	
<i>AtHEMAIF</i>	AGAGGTTGGAGGACTGAGGCA	
<i>AtHEMAIR</i>	ACCGTCTCCAATGAATCCCTC	
<i>AtPORAF</i>	CATTTGGACTTGGCGTCTTTG	
<i>AtPORAR</i>	AAGAAAGTGGCCCAAATGGTT	
<i>AtPORBF</i>	GGGTTTGAGCTTAGTGTTGCG	
<i>AtPORBR</i>	TACCCGCCAATGTATTCGTGT	
<i>AtPORCF</i>	CGCGGTTTACCAACCAACTG	
<i>AtPORCR</i>	CTCCAAGGTTTGCCTTTGGC	
<i>AtHEMDF</i>	AAGAGGCAATGAAATCGGCAG	
<i>AtHEMDR</i>	AGCCTGACAACTTCAAACCCA	
<i>AtHEMG2F</i>	CTGGCACAAAAAAGGGTTCG	
<i>AtHEMG2R</i>	GGGGTTTTGTCTCTGCGTTTC	
<i>AtCPSF</i>	GTTTTTCTGCTTTGTGGGGC	qPCR primers for gibberellin biosynthetic pathway gene
<i>AtCPSR</i>	TAACGCAAACCCAATCTCGC	
<i>AtKSF</i>	TTCTGCCAGTCCATACACCG	
<i>AtKSR</i>	CCTTTGGCCACGATATACG	
<i>AtGA20oxF</i>	CCTTCTCTCTGATCCATCCTCC	
<i>AtGA20oxR</i>	CTGCTTGCGTAGCCAACACT	
<i>AtKOF</i>	TGTCTGCGGAGGAGAAAAGTT	
<i>AtKOR</i>	TCCAACGCTTCTTATCCATG	
<i>AtKAOIF</i>	CCTGACTCCTTCACTCGCACTT	
<i>AtKAOIR</i>	GCCTGAGACGCTTGTGTTCC	

<i>AtKAO2F</i>	AAATGGTCCAAAATGGGAGAAA
<i>AtKAO2R</i>	GCTCTATGATAAGCAAACCCAGG
<i>AtGA2oxF</i>	GAATCACTATCCACCAGCACCG
<i>AtGA2oxR</i>	CAGTCACCGACCAATACGAAGA
<i>AtGA3oxIF</i>	TCCAAATCTCAAACCACGGC
<i>AtGA3oxIR</i>	AACCTTCGGACCACATTTGCT