

Table S1. Primer used for qPCR analysis.

Gene	Sequences (5' to 3')	Length (bp)
KST	RT-F: TATTGTGCACGGATTTTGGA RT-R: CCATGAGAGCGCTTGTGTGA	186
SDR	RT-F: TGGATCAACAAGGCTTTCCTA RT-R: GCCAGCAGTTTTTCAGTTCAAG	174
UGT	RT-F: CCAAACATGTGGGGTGAAA RT-R: GATTCGAGCACCAATTCCA	195
PPs	RT-F: TCAAGTTTGGCAGCATCG RT-R: CCATCCCACCATTTGGAAA	156
PSLC	RT-F: GCAGCATTCGGTTCACGTGAC RT-R: TCCCATGCATAGCCTCTGGA	83
PDs	RT-F: TAAGGATATGGACGCACTGACC RT-R: TCAACCTTATCATCGAAACCACCT	81
RDH2	RT-F: CATTTTGCCCTGGTCCTG RT-R: CCCGGTGACTGAATCGAG	167
$\beta$ -UGT	RT-F: AAAGTGTTCAAAACGTGGATT RT-R: TTGACACGAAAACCAATCTTCTT	161
PLAT10	RT-F: GAAGGGCATAGACTGCAGAA RT-R: GTTCTACCATGGGCCCACAA	100
CYP385C4	RT-F: GGACCAGAACCTCCTTCCA RT-R: TGACGCAAACAGCTCGAA	187
PLAT11	RT-F: GAATTGCACATGCCGATG RT-R: TATTACCATGGGCCCACAAG	53
CaaX PPR	RT-F: GGTGATTCCCCTTGGGATA RT-R: TGGCTGAGCGAGAAAAGAA	240
RPS18	RT-F: ACGTGCTGGTGAACCTTACCGAAGA RT-R: TGCCTATTCAAGAACCAAAGTGGG	99

Note: RT-F: Forward primer; RT-R: Reverse primer.

Table S2. Specific primers of used for RNAi.

Gene	Sequences (5' to 3')
SDR	Oligo1: GGATCCTAATACGACTCACTATAGAAGCTTTACGAACTGACC
	Oligo2: AAGGTCAGTTCGTAAAGCTTCTATAGTGAGTCGTATTAGGATCC
	Oligo3: GGATCCTAATACGACTCACTATAGGTCAGTTCGTAAAGCTTC
	Oligo4: AAGAAGCTTTACGAACTGACCTATAGTGAGTCGTATTAGGATCC
UGT	Oligo1: GGATCCTAATACGACTCACTATAGAAATGTCCTCATCGTTTC
	Oligo2: AAGAAACGATGAGGACATTTCTATAGTGAGTCGTATTAGGATCC
	Oligo3: GGATCCTAATACGACTCACTATAGAAACGATGAGGACATTTTC
	Oligo4: AAGAAATGTCCTCATCGTTTCTATAGTGAGTCGTATTAGGATCC
PPs	Oligo1: GGATCCTAATACGACTCACTATAGTCCCAGAAAATGAAAGTC
	Oligo2: AAGACTTTCATTTTCTGGGACTATAGTGAGTCGTATTAGGATCC
	Oligo3: GGATCCTAATACGACTCACTATAGACTTTCATTTTCTGGGAC
	Oligo4: AAGTCCCAGAAAATGAAAGTCTATAGTGAGTCGTATTAGGATCC
PSLC	Oligo1: GGATCCTAATACGACTCACTATAGCCAGTGAACCAGATTAC
	Oligo2: AAGTAAATCTGGTTCCTGGCTATAGTGAGTCGTATTAGGATCC
	Oligo3: GGATCCTAATACGACTCACTATAGTAAATCTGGTTCCTGGC
	Oligo4: AAGCCAGTGAACCAGATTTACTATAGTGAGTCGTATTAGGATCC
PDs	Oligo1: GGATCCTAATACGACTCACTATAGGTGATGCTAAGGAAAAAC
	Oligo2: AAGTTTTTCCTTAGCATCACCTATAGTGAGTCGTATTAGGATCC
	Oligo3: GGATCCTAATACGACTCACTATAGTTTTCTTAGCATCACC
	Oligo4: AAGGTGATGCTAAGGAAAACTATAGTGAGTCGTATTAGGATCC
PLAT	Oligo1: GGATCCTAATACGACTCACTATAGAATTGGTGAAGAGACAAC
	Oligo2: AAGTTGTCTCTTCACCAATTCTATAGTGAGTCGTATTAGGATCC
	Oligo3: GGATCCTAATACGACTCACTATAGTTGTCTCTTCACCAATTC
	Oligo4:

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	AAGAATTGGTGAAGAGACAACTATAGTGAGTCGTATTAGGATCC
	Oligo1: GGATCCTAATACGACTCACTATAGGTATGTTTCATGTCAGCAC
	Oligo2:
	AAGTGCTGACATGAACATACCTATAGTGAGTCGTATTAGGATCC
CaaX PPR	Oligo3:
	GGATCCTAATACGACTCACTATAGTGCTGACATGAACATACC
	Oligo4:
	AAGGTATGTTTCATGTCAGCACTATAGTGAGTCGTATTAGGATCC
CYP385C4	RNAi-F: TAATACGACTCACTATAGGGGGCTTCTTCGAGTGAACCAG
	RNAi-R: TAATACGACTCACTATAGGGACAGGGTTGATGTCGTTTCC
$\beta$ -UGT	RNAi-F: TAATACGACTCACTATAGGGCTATGATTTGGATGAAGA
	RNAi-R: TAATACGACTCACTATAGGGTCAAGATGAACTTTTTG

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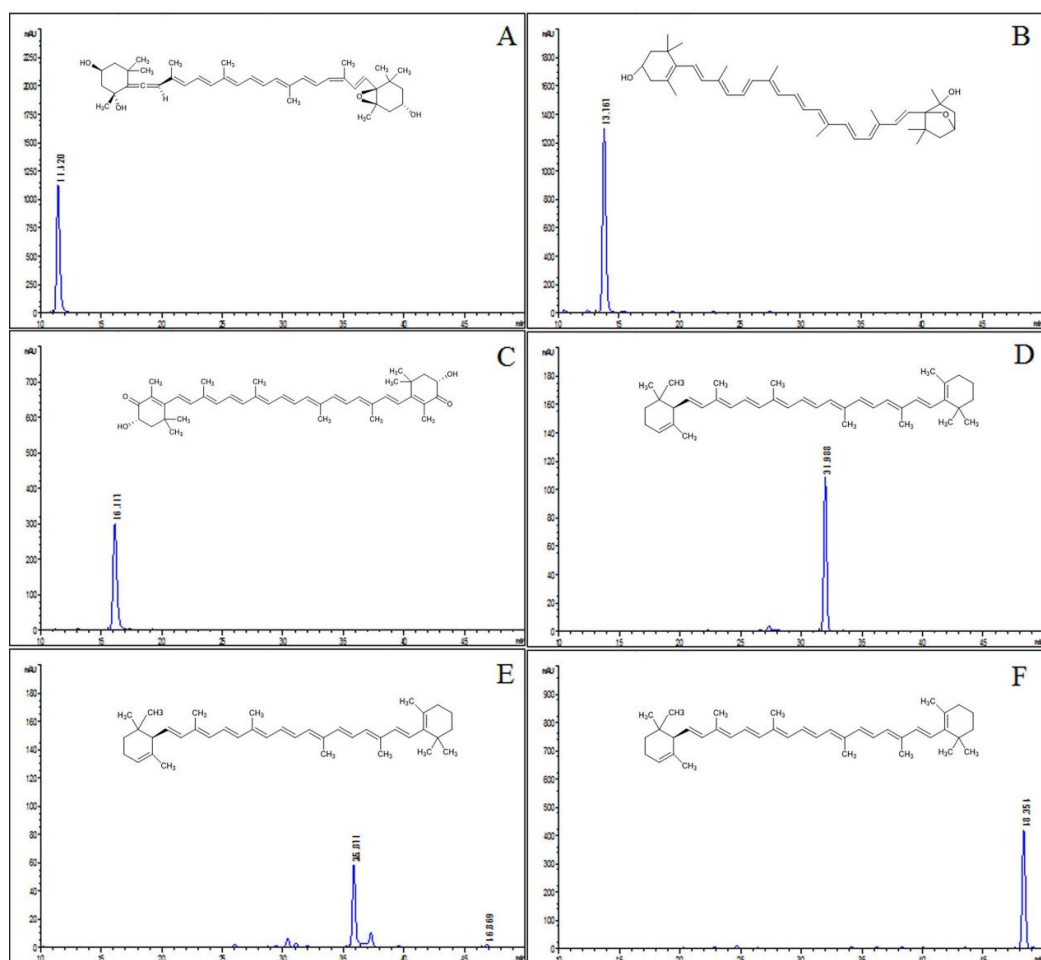


Figure S1. The chromatogram of 6 carotenoid standards.

A, neoxanthin; B, cucurbitaxanthin A; C, astaxanthin; D,  $\alpha$ -carotene; E,  $\beta$ -carotene; F,  $\gamma$ -carotene.