

Supplementary material

Table S1. Experimental diet compositions (units: g/kg)

Components	HFD	HFD+LZ	HFD+HZ
Standard laboratory chow	333.3	333.3	333.3
Casein	200.0	200.0	200.0
Hydrogenated coconut oil	220.0	220.0	220.0
Soybean oil	16.7	16.7	16.7
Cornstarch	102.2	102.2	102.2
Maltodextrin	102.0	102.0	102.0
Sodium carbonate	6.7	6.7	6.7
Potassium citrate	2.7	2.7	2.7
Choline bitartrate	1.4	1.4	1.4
Vitamin and mineral mixture	15.0	15.0	15.0
Zeaxanthin	--	0.02	0.04
Total	1000	1000	1000
Fat, % (calories)	45%	45%	45%

HFD: high fat diet group, HFD+LZ: high fat diet +20mg/kg zeaxanthin, HFD+HZ: high fat diet +40mg/kg zeaxanthin.

Table S2. Primers sequences used in qRT-PCR analysis.

Gene name	Forward primer (5'–3')	Reverse primer (5'–3')	Accession No.
PPAR γ	AGACCACTCGCATTCCTTT	CCACAGACTCGGCACTCAAT	NM_011146
C/EBP α	ACCGGGTTTCGGGACTTGA	CCCGCAGGAACATCTTTAAGTGA	NM_007678
HSL	TCCTGGAACCTAAGTGGACGCAAG	CAGACACACTCCTGCGCATAGAC	NM_010719
Perilipin	GTCAATGAACAAGGGCCCAAC	CACAGGCAGCTGCAGAACTCTC	NM_001113471
FABP4	TGGGAACCTGGAAGCTTGTCTC	GAATTCCACGCCCAGTTTGA	NM_024406
FAS	TGCTGTTGGAAGTCAGCTATGAA	GATGCCTCTGAACCACTCACAC	NM_007988
SREBP1-c	CCGAGATGTGCGAACTGGA	GAAGTCACTGTCTTGGTTGTTGATG	NM_011480
ACC	AGTGATGGTGGCCTGCTCTTG	AGCAGACGGTGAGCGCATT	NM_133360
β -actin	CATCCGTAAAGACCTCTATGCCAAC	ATGGAGCCACCGATCCACA	NM_007393

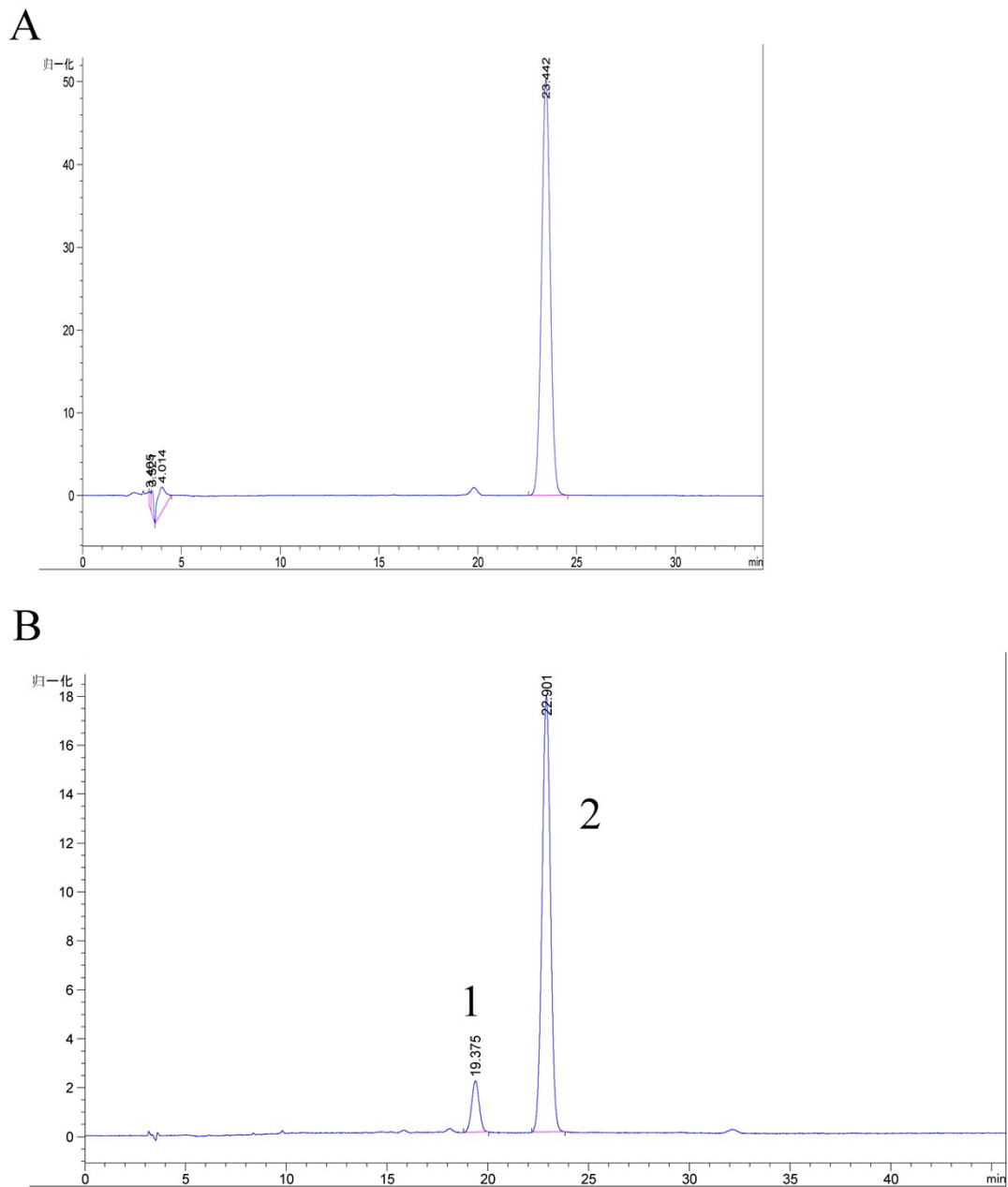


Fig. S1 HPLC chromatogram of zeaxanthin standard and preparation. (A) zeaxanthin standard. (B) zeaxanthin preparation used for mice experiment, the peak assignments are as follows: (1) lutein; (2) zeaxanthin.

Content of lutein is about 15-20 % in the zeaxanthin preparation according to the HPLC peak area.

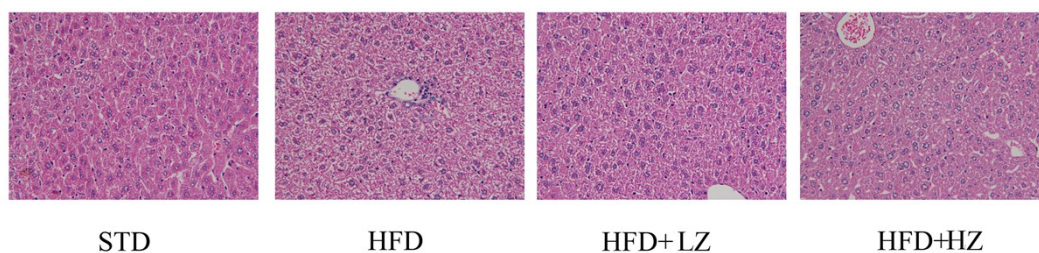


Fig S2. The left lobe of liver stained by H&E. The liver pathological states were observed and photographed in sight under light microscopy ($200\times$ magnification). STD: standard treatment diet group, HFD: high fat diet group, HFD+LZ: high fat diet +20mg/kg zeaxanthin, HFD+HZ: high fat diet +40mg/kg zeaxanthin.