

Supplemental information

Table S1. Fatty acid composition of tilapia feeds (mg/g feed).

Fatty acid	CD	HFD
SFAs	15.62 ± 1.10	72.67 ± 0.54
Myristic (C14:0)	2.29 ± 0.04	4.29 ± 0.02
Palmitic (C16:0)	9.95 ± 0.06	49.58 ± 0.44
Stearic (C18:0)	2.49 ± 0.38	18.08 ± 0.05
Behenic (C22:0)	0.41 ± 0.48	0.39 ± 0.01
Lignoceric (C24:0)	0.48 ± 0.14	0.32 ± 0.02
MUFAs	11.18 ± 1.00	63.62 ± 0.20
Palmitoleic (C16:1n7)	3.22 ± 0.20	3.72 ± 0.01
Oleic (C18:1n9c)	6.15 ± 0.59	58.44 ± 0.00
Gondoic (C20:1n9)	0.28 ± 0.08	0.24 ± 0.06
Erucic (C22:1n9)	0.88 ± 0.10	0.75 ± 0.02
Nervonic (C24:1n9)	0.64 ± 0.03	0.47 ± 0.12
PUFAs	15.64 ± 1.20	23.40 ± 6.04
Linoleic (C18:2n6c)	2.08 ± 0.44	13.75 ± 5.52
γ-Linolenic (C18:3n6)	0.92 ± 0.19	0.79 ± 0.04
α-Linolenic (C18:3n3)	0.60 ± 0.10	1.21 ± 0.13
Dihomo-γ-linolenic (C20:3n6)	0.07 ± 0.00	0.04 ± 0.00
Eicosapentaenoic (C20:5n3)	5.48 ± 0.37	3.35 ± 0.18
Docosahexaenoic_(C22:6n3)	6.50 ± 0.10	4.26 ± 0.18
Total fatty acids	42.44 ± 0.76	162.30 ± 4.94
UFA/SFA	1.79 ± 0.08	1.21 ± 0.09
n3/n6	4.18 ± 0.74	0.65 ± 0.24

All data are shown as mean ± SD (n = 3).

Table S2. Fatty acid composition (mg/g wet weight) of liver of tilapia fed HFD supplemented with FCRE for 2 weeks.

Fatty acid	Control	HFD	FCRE-HFD
Total	61.58 ± 2.88^c	221.30 ± 47.93^a	99.87 ± 11.77^b
SFA	25.12 ± 4.24^c	69.35 ± 13.30^a	34.39 ± 3.43^b
Myristic (C14:0)	1.69 ± 0.65 ^b	6.33 ± 1.31 ^a	1.72 ± 0.76 ^b
Palmitic (C16:0)	14.55 ± 2.31 ^c	44.08 ± 11.52 ^a	21.70 ± 2.30 ^b
Stearic (C18:0)	7.87 ± 2.00 ^b	16.86 ± 2.30 ^a	9.78 ± 1.25 ^b
Arachidic (C20:0)	0.61 ± 0.38	1.43 ± 0.75	0.94 ± 0.77
Behenic (C22:0)	0.40 ± 0.10 ^b	0.66 ± 0.06 ^a	0.27 ± 0.03 ^b
MUFA	14.73 ± 1.10^c	114.71 ± 28.32^a	38.48 ± 8.82^b
Palmitoleic (C16:1n7)	2.86 ± 0.42 ^b	9.84 ± 2.32 ^a	3.40 ± 1.69 ^b
Oleic (C18:1n9c)	10.12 ± 1.26 ^c	97.45 ± 25.25 ^a	33.55 ± 7.18 ^b
Gondoic (C20:1n9)	0.79 ± 0.40 ^b	5.67 ± 2.31 ^a	0.76 ± 0.07 ^b
Erucic (C22:1n9)	0.96 ± 0.32 ^b	1.75 ± 0.39 ^a	0.77 ± 0.26 ^b
PUFA	21.64 ± 0.59^c	37.33 ± 6.83^a	27.13 ± 1.39^b
C20:2n9	0.40 ± 0.21 ^c	2.65 ± 1.06 ^a	0.90 ± 0.04 ^b
Linoleic (C18:2n6c)	3.27 ± 0.51 ^c	17.20 ± 4.08 ^a	9.68 ± 0.91 ^b
γ-Linolenic (C18:3n6)	0.30 ± 0.10 ^b	0.75 ± 0.13 ^a	0.44 ± 0.04 ^b
Dihomo-γ-linolenic (C20:3n6)	0.93 ± 0.20 ^b	2.42 ± 0.74 ^a	1.04 ± 0.24 ^b
Arachidonic (C20:4n6)	3.25 ± 0.59 ^c	6.23 ± 1.16 ^a	4.68 ± 0.59 ^b
α-Linolenic (C18:3n3)	0.54 ± 0.09	1.01 ± 0.49	0.57 ± 0.14
Eicosapentaenoic (C20:5n3)	1.30 ± 0.61 ^a	0.54 ± 0.26 ^b	0.90 ± 0.54 ^b
Docosahexaenoic_(C22:6n3)	11.64 ± 1.19 ^a	6.53 ± 0.13 ^c	8.94 ± 0.22 ^b
UFA/SFA	1.49 ± 0.28^c	2.18 ± 0.07^a	1.91 ± 0.17^b
n3/n6	1.75 ± 0.24^a	0.31 ± 0.04^c	0.66 ± 0.08^b
C16:1/C16:0	0.20 ± 0.05	0.24 ± 0.11	0.16 ± 0.09
C18:1/C18:0	1.39 ± 0.54^c	5.70 ± 0.97^a	3.51 ± 1.22^b

All values are expressed as mean ± SD of 8 fish. Superscripts with different letters are significantly ($p < 0.05$) different.

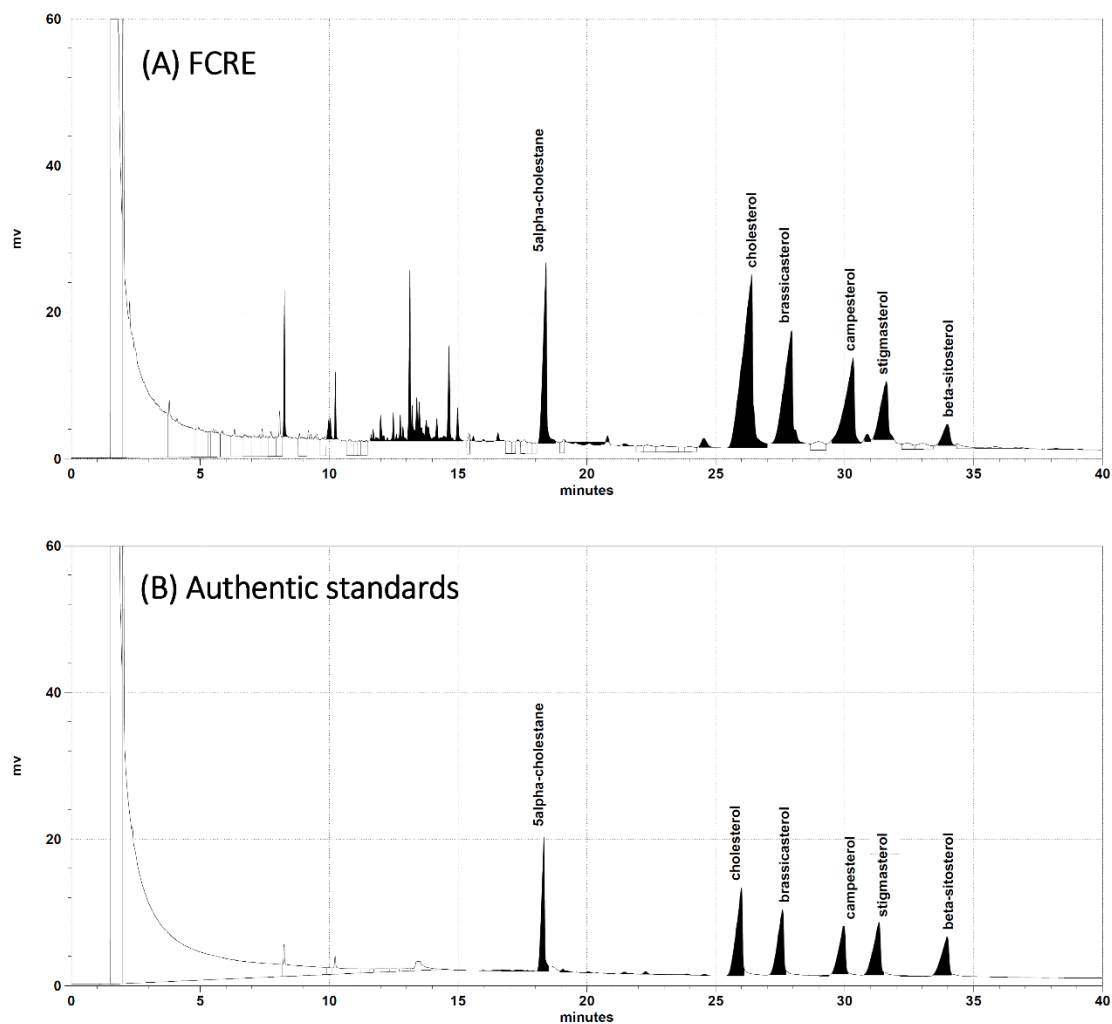


Fig. S1. GC-FID chromatogram of phyosterols of (A) FCRE with 5α -cholestane as an internal standard, and (B) authentic standards.

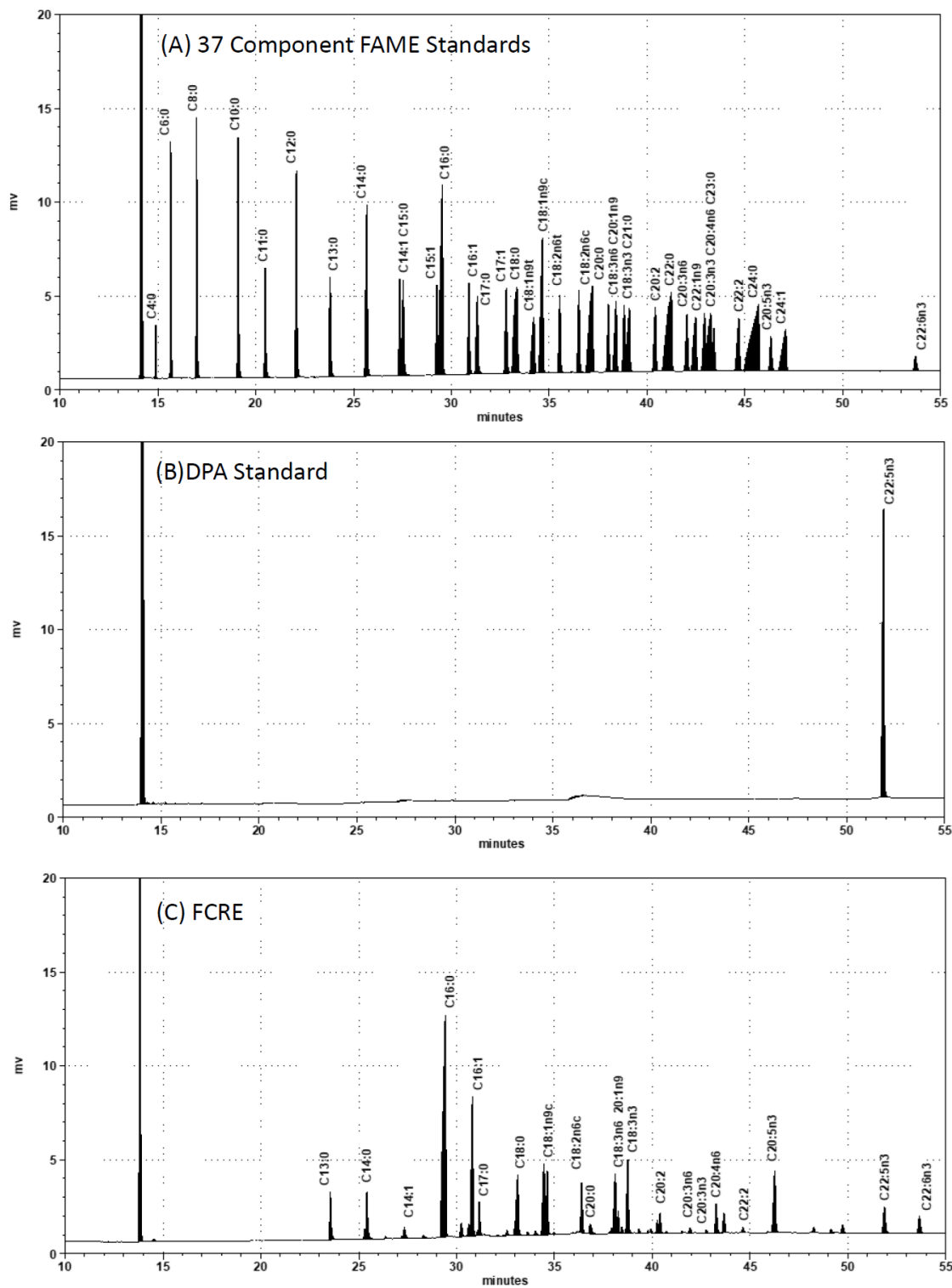


Fig. S2. GC-FID chromatograms of fatty acids. (A) Authentic standard, (B) DPA standard, (C) FCRE.

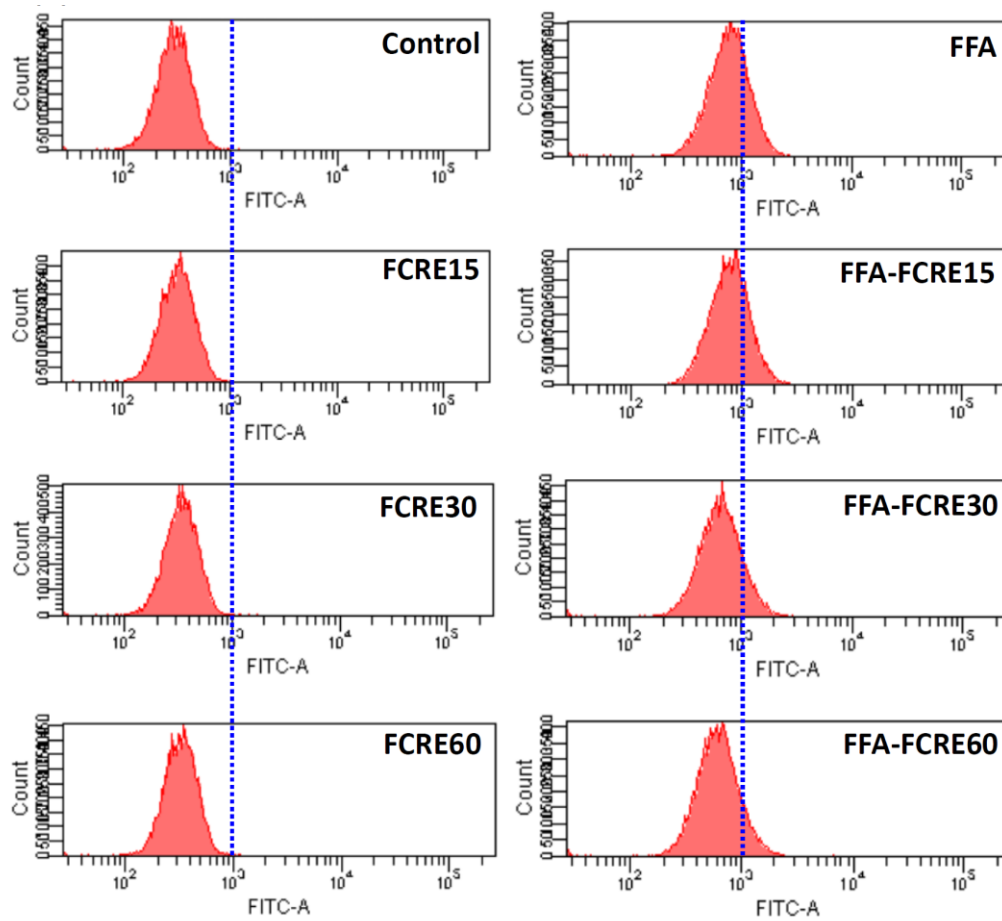


Fig. S3. HepG2 cells treated with free fatty acids and FCRE for 24 h, then stained with 493/503 BODIPY and analyzed by flow cytometry.