

Table S1. Compositions of Experimental Diets

Ingredients(g/kg)	LF	HF	0.02%SSC	0.08%SSC	0.02%SG	0.08%SG
Casein	200	200	200	200	200	200
Cornstarch	650	250	249.7	249	249.7	249
Sucrose	0	200	200	200	200	200
Corn oil	50	50	50	50	50	50
Lard	0	200	200	200	200	200
Mineral mix ^a	35	35	35	35	35	35
Vitamin mix ^b	10	10	10	10	10	10
Cellulose	5	5	5	5	5	5
Choline bitartrate	3	3	3	3	3	3
DL-methionine	2	2	2	2	2	2
SSC	--	--	0.25	1	--	--
SG	--	--	--	--	0.25	1
Energy (kcal/g) ^c	3.85	4.85	4.85	4.85	4.85	4.85

^a AIN-93G mineral mix.

^b AIN-93G vitamin mix.

^c Food energy = 4×amount of carbohydrate + 4×amount of protein +9×amount of fat. Energy density of carbohydrate, protein, and fat are 4, 4, and 9 kcal/g, respectively.

LF, low-fat diet; HF, high-fat diet; SSC, saponins of sea cucumber; 0.02%SSC, high-fat diet plus 0.02% SSC; 0.08% SSC, high-fat diet plus 0.08% SSC r; 0.02%SG, high-fat diet plus 0.02% SG; 0.08% SG, high-fat diet plus 0.08% SG

Table S2. Primers used in this study

Gene	Forward primer	Reverse primer
FAS	TTGATGATTCAGGGAGTGGA	AGCAGATGAGTTGTTCTTGGAC
SCD-1	CCACTCGCCTACACCAACG	GGGGTCCCTCCTCATCCT
SREBP1-c	AACCTCATCCGCCACCTG	TGGTAGACAACAGCCGCATC
PPAR- α	GTCACA CAATGCAATTCGCTTT	TTTGCTTTTTTCAGATCTTGGCA
PGC-1 α	AGGTCCCCAGGCAGTAGAT	GAGCAGCGAAAGCGTCAC
SIRT1	GTCTCCTGTGGGATTCCTGA	ACACAGAGACGGCTGGA ACT
AdipoR1	ACGTTGGAGAGTCATCCCGTAT	CTCTGTGTGGATGCGGAAGAT
GCK	CCCTGAGTGGCTTACAGTTC	ACGGATGTGAGTGTTGAAGC
β -actin	CAGGCATTGCTGACAGGATG	TGCTGATCCACATCTGCTGG