Table S1. Formulation and proximate analysis of the experimental diets [1].

	Diets			
Ingredients g/kg	**Control**	**HFD**	**HFD-CDCA 300**	**HFD-CDCA 900**
Fish meal	390	390	390	390
Soybean meal	200	200	200	200
Wheat meal	230	230	230	230
Wheat starch	60	60	60	60
Fish oil	60	120	120	120
Soybean lecithin	15	15	15	15
Vitamin premix[2]	20	20	20	20
Mineral premix[3]	20	20	20	20
Attractant[4]	3	3	3	3
Mold inhibitor[5]	1	1	1	1
CDCA			0.3	0.9
Proximate composition (% dry matter)				
Crude protein	45.2	45.5	45.1	45.4
Crude lipid	11.5	17.9	17.1	17.7

[1] CDCA, chenodeoxycholic acid; HFD, high-fat diet; HFD-CDCA300, high-fat diet supplemented with 300 mg/kg CDCA; HFD-CDCA 900, high-fat diet supplemented with 900 mg/kg CDCA. [2]Vitamin premix (mg or g/kg diet): cholecalciferol, 5 mg; retinol acetate, 32 mg; thiamin 25 mg; cyanocobalamin, 10 mg; riboflavin, 45 mg; pyridoxine HCl, 20 mg; ascorbic acid, 2000 mg; alpha-tocopherol (50%), 240 mg; menadione, 10 mg; pantothenic acid, 60 mg; inositol, 800 mg; niacin acid, 200 mg; folic acid, 20 mg; biotin (2%), 60 mg; choline chloride (50%), 4000 mg; microcrystalline cellulose, 12.47 g. [3]Mineral premix (mg or g/kg diet): $CuSO_4 \cdot 5H_2O$, 10 mg; $Ca(IO_3)_2 \cdot 6H_2O$ (1%), 60 mg; $CoCl_2 \cdot 6H_2O$ (1%), 50 mg; $FeSO_4 \cdot H_2O$, 80 mg; $MgSO_4 \cdot 7H_2O$, 1200 mg; $MnSO_4 \cdot H_2O$, 45 mg; $NaSeSO_3 \cdot 5H_2O$ (1%), 20 mg; $ZnSO_4 \cdot H_2O$, 50 mg; $CaH_2PO_4 \cdot H_2O$, 10 g; Zeolite, 8.485 g. [4]Attractants: glycine and betaine [5]Mold inhibitor: contained 50% calcium propionic acid and 50% fumaric acid.

Table S2. Primers used for qPCR analysis [1.]

Genes	Forward Sequences (5′–3′)	Reverse Sequences (5′–3′)	Accession No.
atgl	CCATGCATCCGTCCTTCAACC	GAGATCCCTAACCGCCCACT	GQ372967.1
apob100	AGAGTGTTGTCCAGGATAAAGATGC	CAGGGCTCAGGGTCTCAGTC	XM_027284282.1
atf4	GCCGTTATTCTGCTCCATCTTCT	AGACCTTACCCTGAGCCCACAT	XM_019253810.2
atf6	CAGATAATAAGGAGGCTGAGAGTGC	CGTAGGTATGATGAGGTGCGTAGT	XM_010730227.3
bsep	TGATGGCGGCGGGTAGTTT	GCAGCAGTGTAGTTCCTCTTCC	XM_027291804.1
cd36	GAGCATGATGGAAAATGGTTCAAAG	GAGCATGATGGAAAATGGTTCAAAG	KM593122.1
chop	TCTGGATGTTCTGGAGAGTTGTTC	AGGATGATGATGAGGTGTGATGC	XM_010732112.3
cpt1	TGGGTGCTGGTGGCGGATTT	GGGCTGGAGAACTTGCTGGAGA	XM_019255573.2
eif2α	ATGCCGGGGCTCAGCTGTC	CTAGTCCTCTGCTTTGGCCTCC	XM_019277014.2
fas	ACTCCTATGTGGCAGCATAGAC	GTTTCAGCCTCAGACTCTTTGCC	KP889061.1
fxr	TGGAGGAAAGGATACGCAAGAGTG	TGTCAGGATGGTTACGGTGGTG	XM_010737684

gapdh	GACAACGAGTTCGGATACAGC	CAGTTGATTGGCTTGTTTGG	XM_010743420.3
grp78	GGTGGCGATGACAAGCAAAC	CTGAGAACAGCAGCAACAAGC	XM_010738795.3
lxrα	TCTCAAAAGGAATGAACGAC	TAAGGTTGCTGTAGCCTCTCA	XM_019273432.2
ldlr	ACATAAGCGCCGGTGCTGTT	TACGATGTCCTCTGGCTGATTC	KM593127.1
mtp	ATGTCCAAAATGTTCTCCATGTCTG	ATGTCAATAGCCAACCCTCCTTG	KP027412.1
pparα	GTCAAGCAGATCCACGAAGCC	TGGTCTTTCCAGTGAGTATGAGCC	XM_027291871.1
scd1	ACAAGCTCTCCGTGGTGGTCAT	GCCAGGTAGCGTTCAGCAACAT	KP202157.1
shp	GCGACGGACAGTGTGCTTGAA	ACTGGTCGTTTGGTGGCATCTG	KY745777.1
srebp1	CCAAGACAGAGGAGTGCGAGAC	TCATTTGCTGGCAGTCGTGGAG	KP342262.1
xbp1s	GTCTTCTGAGTCCGCAGCAGGTG	AGGATGTCCAGAATGCCCAGTAG	XM_019264508.2
β-actin	CTACGAGGGTTATGCCCTGCC	TGAAGGAGTAACCGCGCTCTG	GQ168793.1

[1] *atgl*, adipose triglyceride lipase; *apob100*, Apolipoprotein B100*; atf4*, activating transcription factor 4*; atf6*, activating transcription factor 6*; bsep*, bile salt export pump*; chop*, C/EBP homologous protein*; cpt1*, carnitine palmitoyltransferase I*; eif2α*, eukaryotic initiation factor 2α*; fas*, fatty acid synthase*; fxr*, farnesoid X receptor; *gapdh*, glyceraldehyde-3-phosphate

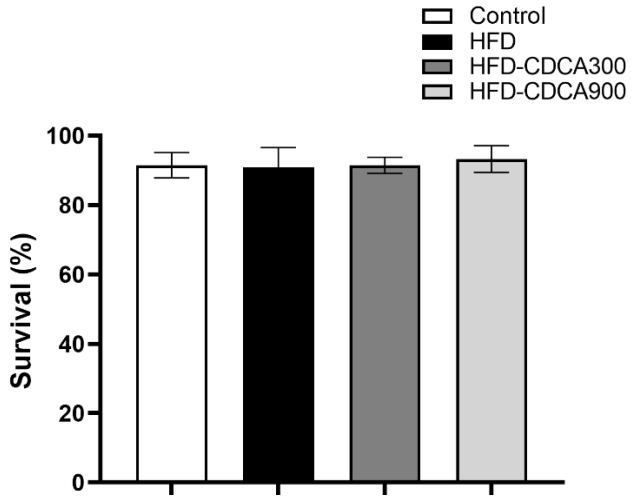
dehydrogenase; *grp78,* glucose-regulated protein 78*; lxrα,* liver X receptor α*; ldlr,* low density lipoprotein receptor*; mtp,* microsomal triglyceride transfer protein*; pparα,* proliferator-activated receptor α*; scd1,* stearoyl-CoA desaturase 1; *shp,* small heterodimer partner; *srebp1,* sterol regulatory element binding protein 1*; xbp1s,* X-box-binding protein 1.

Table S3. Primers used for plasmid construction [1.]

Primers	Forward Sequences (5′–3′)	Reverse Sequences (5′–3′)
pGL-SREBP1	GGGGTACCAGGTTAAGTATGGTTG CCAGGTAA	CCGCTCGAGCTTTACTCCTGTGTGCGG
pGL-PPARα	CCCTCGAGGGCAGCAGCAGCAATC GTCATCGT	CCAAGCTTTGTCTGTCAGCGGAGTCAGGTGT TCT
pGL-ATGL	GGGGTACCGCCTCTGCTCTGCTTAC TTCCTTGTG	CCGCTCGAGCGAAGGAGATGTTCCACGGCG AGTCT

[1] sterol regulatory element binding protein 1; PPARα, proliferator-activated receptor α; ATGL, adipose triglyceride lipase.

A



B

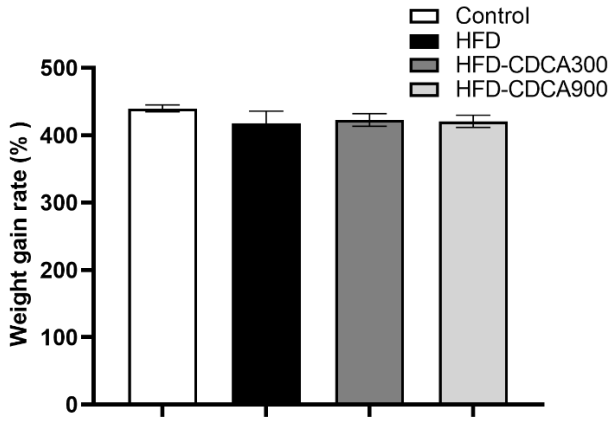


Figure S1. Effects of HFD and supplementation of CDCA on the survival (**A**) and weight gain rate (**B**) of large yellow croakers. Data are shown as means ± SEMs (n = 3) and were analyzed using Duncan's multiple range test. Labeled means without a common letter differ, $p < 0.05$.

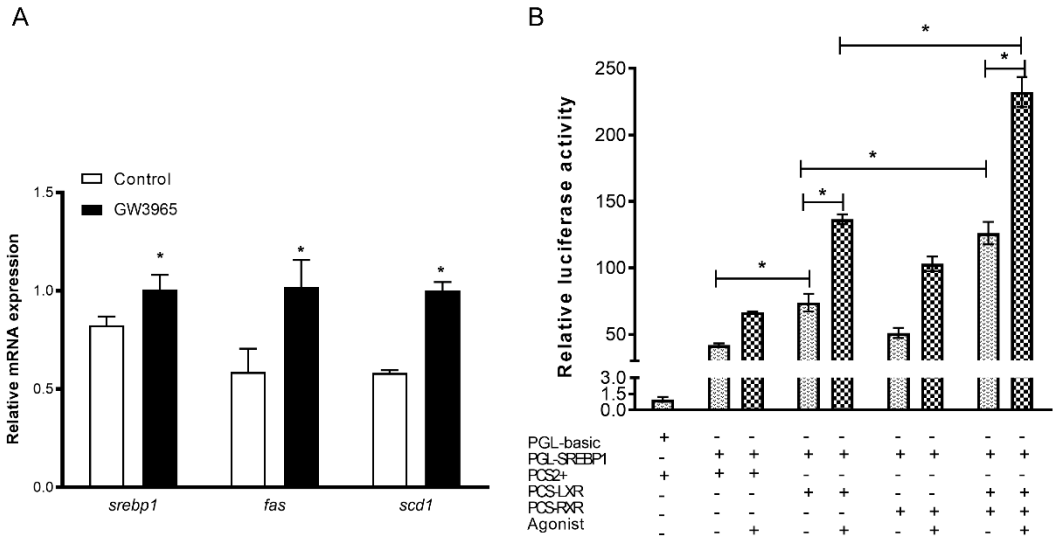


Figure S2. Effects of LXRα on the expression of *srebp1* and other lipogenesis related genes. (**A**) Effects of GW3965 (LXRα agonist) treatment on expression of srebp1, fas and scd1 in cells of large yellow croaker. (**B**) Effects of GW3965 and croaker LXRα overexpression on the promoter activity of SREBP1 in HEK 293T. Data are shown as means ± SEMs (n = 3) and were analyzed using Student's t-test, * $p < 0.05$.