**Supplementary files**

**Table 1**

Formulation and proximate analysis of the experimental diets (% dry weight)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Ingredient | Dietary curcumin level (% dry weight) | | | | |
| 0 | | 0.02 | 0.04 | 0.06 |
| white fish meal | 29.00 | | 29.00 | 29.00 | 29.00 |
| Wheat gluten meal | 8.00 | | 8.00 | 8.00 | 8.00 |
| Casein | 8.00 | | 8.00 | 8.00 | 8.00 |
| Wheat meal | 15.50 | | 15.48 | 15.46 | 15.44 |
| Soybean meal | 18.00 | | 18.00 | 18.00 | 18.00 |
| Fish oil | 8.00 | | 8.00 | 8.00 | 8.00 |
| Soybean oil | 6.00 | | 6.00 | 6.00 | 6.00 |
| Phospholipid | 2.00 | | 2.00 | 2.00 | 2.00 |
| Mineral premix\* | 2.00 | | 2.00 | 2.00 | 2.00 |
| Vitamin premix\*\* | 2.00 | | 2.00 | 2.00 | 2.00 |
| Attractant† | 0.30 | | 0.30 | 0.30 | 0.30 |
| Sodium alginate | 1.00 | | 1.00 | 1.00 | 1.00 |
| Ethoxyquin | 0.10 | | 0.10 | 0.10 | 0.10 |
| Choline chloride | 0.10 | | 0.10 | 0.10 | 0.10 |
| Curcumin | 0.00 | | 0.02 | 0.04 | 0.06 |
| Total | 100.00 | | 100.00 | 100.00 | 100.00 |
| Proximate analysis (n=3) | | | | | |
| Crude protein % | 42.62 | 42.87 | | 43.12 | 42.96 |
| Crude Lipid % | 17.93 | 17.83 | | 17.65 | 17.89 |

All those ingredients were supplied by Great Seven Biotechnology Co., Ltd, China.

\*Mineral premix (mg or g kg-1 diet): CuSO4 **.** 5H2O, 10 mg; Na2SeO3 (1%), 25 mg; ZnSO4 **.** H2O, 50 mg; CoCl2 **.** 6H2O (1%), 50 mg; MnSO4 **.** H2O, 60 mg; FeSO4 **.** H2O, 80 mg; Ca (IO3)2, 180 mg; MgSO4 **.** 7H2O, 1200 mg; zeolite, 18.35 g.

\*\*Vitamin premix (mg or g kg-1 diet): vitamin D, 5 mg; vitamin K, 10 mg; vitamin B12, 10 mg; vitamin B6, 20 mg; folic acid, 20 mg; vitamin B1, 25 mg; vitamin A, 32 mg; vitamin B2, 45 mg; pantothenic acid, 60 mg; biotin, 60 mg; niacin acid, 200 mg; a-tocopherol, 240 mg; inositol, 800 mg; ascorbic acid, 2000 mg; microcrystalline cellulose, 16.47 g.

†Attractant: glycine and betaine.

**Table 2**

Sequences of the PCR primers used in this study

|  |  |  |  |
| --- | --- | --- | --- |
| Target gene | Forward (5′-3′) | Reverse(5′-3′) | References |
| *cpt1* | GCTGAGCCTGGTGAAGATGTTC | TCCATTTGGTTGAATTGTTTACTGTCC | (1) |
| *aco* | AGTGCCCAGATGATCTTGAAGC | CTGCCAGAGGTAACCATTTCCT | (1) |
| *pparα* | GTCAAGCAGATCCACGAAGCC | TGGTCTTTCCAGTGAGTATGAGCC | (2) |
| *srebp1* | TCTCCTTGCAGTCTGAGCCAAC | TCAGCCCTTGGATATGAGCCT | (2) |
| *fas* | CAGCCACAGTGAGGTCATCC | TGAGGACATTGAGCCAGACAC | (1) |
| *dgat2* | TTCGGTGCTTTCTGCAACTTCG | AAGGATGGGGAAGCGGAAGT | (1) |
| *Δ6fad* | TTCGCTTCCTCTGCTGCTATG | CCAGTCACGGTGCTTCTCG | (3) |
| *elovl5* | ATCACCTTCCTTCACATCTATCACC | GAGGCACCGAAGTACGAATGG | (4) |
| *elovl4* | GGGCTCTTATTGGCTATGCT | TGCTTCTTCCCGTTATCCTC | (4) |
| *β-actin* | CTACGAGGGTTATGCCCTGCC | TGAAGGAGTAACCGCGCTCTGT | (1) |

*cpt1*: carnitine palmitoyltransferase I; *aco*: acyl-CoA oxidase; *srebp1*: sterol-regulatory element binding protein 1; *pparα*: peroxisome proliferators-activated receptor α; *fas*: fatty acid synthase; *dgat2*: acyl-CoA: diacylglycerol acyltransferase 2; *Δ6fad*: fatty acyl desaturase 6; *elovl5*: elongases very long-chain fatty acids 5; *elovl4*: elongases very long-chain fatty acids 4.

1. Yan J, Liao K, Wang T *et al.* (2015) Dietary lipid levels influence lipid deposition in the liver of large yellow croaker (*Larimichthys crocea*) by regulating lipoprotein receptors, fatty acid uptake and triacylglycerol synthesis and catabolism at the transcriptional level. *PLoS One* **10**, e0129937.

2. Cai Z, Feng S, Xiang X *et al.* (2016) Effects of dietary phospholipid on lipase activity, antioxidant capacity and lipid metabolism-related gene expression in large yellow croaker larvae (*Larimichthys crocea*). *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology* **201**, 46-52.

3. Ji R, Xu X, Xiang X *et al.* (2020) Regulation of adiponectin on lipid metabolism in large yellow croaker (*Larimichthys crocea*). *Biochimica et Biophysica Acta (BBA)-Molecular and Cell Biology of Lipids*, 158711.

4. Li S, Monroig Ó, Wang T *et al.* (2017) Functional characterization and differential nutritional regulation of putative Elovl5 and Elovl4 elongases in large yellow croaker (*Larimichthys crocea*). *Sci. Rep.* **7**, 1-15.