Supplementary Material

**Supplementary Table S1**

Fatty acid compositions of different dietary lipid sources (mg g-1).1

|  |  |
| --- | --- |
| Fatty acids | Dietary n-3 PUFA lipid sources |
| Fish oil | Krill oil | Linseed oil |
| 14:0 | 40.25 | 42.79 | 0.29 |
| 16:0 | 101.28 | 82.41 | 29.91 |
| 18:0 | 29.07 | 6.07 | 24.84 |
| Total SFA | 170.60 | 131.27 | 55.04 |
| 16:1n-7 | 54.34 | 26.60 | 0.43 |
| 18:1n-9 | 105.35 | 69.15 | 135.49 |
| 20:1n-9 | 5.41 | 3.10 | 0.89 |
| Total MUFA | 165.10 | 98.85 | 136.81 |
| 18:2n-6 | 12.69 | 8.94 | 82.66 |
| 20:4n-6 | 8.23 | 2.11 | 0.10 |
| Total n-6 PUFA | 20.92 | 11.05 | 82.76 |
| 18:3n-3 (ALA) | 4.53 | 6.73 | 249.72 |
| 18:4n-3 | 9.88 | 20.44 | 0.20 |
| 20:4n-3 | 4.73 | 2.65 | nd |
| 20:5n-3 (EPA) | 66.23 | 93.97 | nd |
| 22:5n-3 | 11.78 | 2.47 | nd |
| 22:6n-3 (DHA) | 78.21 | 52.94 | nd |
| EPA+DHA | 144.44 | 146.91 | nd |
| n-3 LC-PUFA | 160.95 | 152.03 | 0.00 |
| n-3/n-6 PUFA | 8.38 | 16.22 | 3.02 |
| DHA/EPA | 1.19 | 0.56 | - |

1 Some fatty acids present in trace amounts, such as 8:0, 12:0, 22:1n-11, 18:3n-6, 20:2n-6 and 20:5n-6 are not listed in Table S1. ALA, α-linolenic acid; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; MUFA, mono-unsaturated fatty acids; nd, not detected; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids.

**Supplementary Table S2**

Fatty acid compositions of experimental diets (mg g-1).1

|  |  |
| --- | --- |
| Fatty acids | Dietary n-3 PUFA lipid sources |
| Fish oil | Krill oil | Linseed oil |
| 14:0 | 2.32 | 2.73 | 0.86 |
| 16:0 | 9.52 | 8.85 | 14.17 |
| 18:0 | 2.53 | 1.53 | 1.92 |
| Total SFA | 14.36 | 13.11 | 16.94 |
| 16:1n-7 | 2.71 | 1.85 | 0.73 |
| 18:1n-9 | 9.94 | 7.45 | 8.27 |
| 20:1n-9 | 0.41 | 0.22 | 0.11 |
| Total MUFA | 13.06 | 9.52 | 9.11 |
| 18:2n-6 | 8.90 | 8.39 | 9.92 |
| 20:4n-6 | 0.41 | 0.16 | 0.09 |
| Total n-6 PUFA | 9.31 | 8.55 | 10.01 |
| 18:3n-3 (ALA) | 1.45 | 1.47 | 9.22 |
| 18:4n-3 | 0.64 | 1.09 | 0.28 |
| 20:4n-3 | 0.24 | 0.17 | 0.08 |
| 20:5n-3 (EPA) | 3.97 | 5.47 | 1.62 |
| 22:5n-3 | 0.70 | 0.36 | 0.25 |
| 22:6n-3 (DHA) | 5.16 | 3.75 | 1.57 |
| EPA+DHA | 9.13 | 9.23 | 3.19 |
| n-3 LC-PUFA | 10.07 | 9.75 | 3.52 |
| n-3/n-6 PUFA | 1.31 | 1.44 | 1.30 |
| DHA/EPA | 1.30 | 0.69 | 0.97 |

1 Some fatty acids present in trace amounts, such as 8:0, 12:0, 22:1n-11, 18:3n-6, 20:2n-6 and 20:5n-6 are not listed in Table S2. ALA, α-linolenic acid; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; MUFA, mono-unsaturated fatty acids; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids.

**Table S3**

The primer sequences used for real-time quantitative PCR.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Gene name | Sequence (5′ to 3′) | Product size (bp) | GenBank No. or publication | Function |
| *lpl* | F: ACAAGACAGACGCAGAGTTR: CCTCTCCTAACAAACACCC | 147 | MF537406 | Lipolysis |
| *hsl* | F: GTTCCCATTCTCTCCATTGR: ACCACCAGCACTGTCACCT | 159 | MF537408 | Lipolysis |
| *cpt1* | F: GCTTGCCTACTACCGACACR: CCTTGGACATCTTACTGCTC | 155 | MF537407 | Lipolysis |
| *cpt2* | F: TGGGACAAGGTTTTGATAGGCR: TGGAGATGATGATGTGGTTGA | 123 | PRJNA432636 | Lipolysis |
| *nd1* | F: CGAAGCCGAGGTAGTGTAR: CGATTTTGCTGAAGGAGA | 228 | AB093006 | Electron transport chain complex |
| *sdhc* | F: CGGCTCCTACCCACACTACTR: CCCAAATCCCACACCAAG | 179 | KY406169 | Electron transport chain complex |
| *cytb* | F: GAACTACGGTTGACTTCTACGR: AGTAATAACTGTTGCCCCTC | 223 | KY406169 | Electron transport chain complex |
| *cox Ⅰ* | F: TATTGTAAGTCAAGAGTCCGR: CTCACAGCATAGAAGGTC | 254 | AB093006 | Electron transport chain complex |
| *cox Ⅱ* | F: GTGAATAACCCGTCTGTAACTTR: CATCTAATAATCGGAACCCTG | 145 | AB093006 | Electron transport chain complex |
| *cox Ⅲ* | F: CAAAGGTTTACGGTGAGGTR: CCATAGGGAGGTCAGTTCAT | 132 | AB093006 | Electron transport chain complex |
| *Atpase6* | F: TAGCACTCTCTCTACCTTTR: AGCAAGTGTTCCTGGTC | 167 | AB093006 | Mitochondrial energy metabolism |
| *sirt1* | F: CTCCACCACTTCCAACCTTAGR: CCAGCACCAGTCAATACGATG | 318 | PRJNA432636 | Mitochondrial energy metabolism |
| *sirt3* | F: CAACACTGCTCACCACTTCCR: TGGCTTCACTTTGCCCTTA | 259 | PRJNA432636 | Mitochondrial energy metabolism |
| *nrf1* | F: CATTGACGGCATCCCCAR: CACGACACCTTATGTTTCTGG | 207 | AB093006 | Transcriptional activator |
| *β-actin* | F: GAAGTAGCCGCCCTGGTTGTGR: GGGTCAGAATACCTCGCTTGCTC | - | （Pan et al., 2010） | Housekeeping gene |

*Atpase6*, ATP synthase 6; *cox Ⅰ*, cytochrome *c* oxidase subunit I; *cox Ⅱ*, cytochrome *c* oxidase subunit Ⅱ; *cox Ⅲ*, cytochrome *c* oxidase subunit Ⅲ; *cpt*, carnitine palmitoyltransferase; *cytb*, cytochrome *b*; *hsl*, hormone-sensitive lipase; *lpl*, lipoprotein lipase; *nd1*, NADH dehydrogenase subunit 1; *nrf1*, nuclear respiratory factor 1; *sdhc*, succinate dehydrogenase subunit c; *sirt*, silent information regulator.

**Reference**

Pan LQ, Yue F, Miao JJ, Zhang L, Li J. Molecular cloning and characterization of a novel c-type lysozyme gene in swimming crab *Portunus trituberculatus*. Fish Shellfish Immun. (2010) 29:286–292. doi: 10.1016/j.fsi.2010.04.011