

Table S1. Fatty acids profiles of total lipids in three fish heads (g/100g, mean \pm S.D., n=3)

Fatty acid	Big eye tuna	Atlantic salmon	Big head carp
C4:0	0.92 \pm 0.61 ^a	0.16 \pm 0.16 ^c	0.27 \pm 0.36 ^b
C14:0	0.94 \pm 0.85 ^a	0.32 \pm 0.12 ^c	0.59 \pm 0.30 ^b
C15:0	0.50 \pm 0.44 ^b	0.48 \pm 0.42 ^b	0.74 \pm 0.76 ^a
C16:0	3.49 \pm 0.34 ^a	3.82 \pm 0.21 ^a	2.99 \pm 1.60 ^b
C17:0	1.56 \pm 0.29 ^a	0.06 \pm 0.06 ^c	0.40 \pm 0.45 ^b
C18:0	1.80 \pm 0.27 ^a	0.66 \pm 0.66 ^b	0.34 \pm 0.49 ^c
C20:0	0.11 \pm 0.12 ^b	0.21 \pm 0.03 ^a	0.03 \pm 0.05 ^c
C21:0	0.06 \pm 0.10 ^c	0.79 \pm 0.79 ^b	1.58 \pm 2.30 ^a
C22:0	0.20 \pm 0.18 ^b	0.10 \pm 0.06 ^b	1.25 \pm 1.94 ^a
C23:0	1.06 \pm 0.40 ^a	0.03 \pm 0.03 ^c	0.68 \pm 0.41 ^b
C24:0	0.09 \pm 0.05 ^b	0.01 \pm 0.01 ^b	0.52 \pm 0.25 ^a
ΣSFA	10.73\pm3.65^a	6.64\pm2.55^b	9.39\pm8.91^a
C14:1	0.39 \pm 0.10 ^c	1.28 \pm 1.25 ^a	0.89 \pm 0.94 ^b
C15:1	1.34 \pm 0.23 ^a	0.19 \pm 0.07 ^c	0.70 \pm 0.49 ^b
C16:1	3.03 \pm 1.14 ^c	17.49 \pm 8.97 ^b	27.42 \pm 4.36 ^a
C17:1	0.76 \pm 0.33 ^c	2.01 \pm 2.00 ^a	1.09 \pm 0.28 ^b
C18:1N9	2.78 \pm 1.79 ^b	5.66 \pm 1.77 ^a	6.68 \pm 0.72 ^a
C20:1	0.66 \pm 1.14 ^c	6.33 \pm 1.94 ^a	2.74 \pm 0.80 ^b
C22:1N9	0.45 \pm 0.62 ^a	0.12 \pm 0.01 ^c	0.58 \pm 0.69 ^a
C24:1	0.74 \pm 0.37 ^a	0.43 \pm 0.18 ^b	0.30 \pm 0.27 ^b
ΣMUFA	10.15\pm5.72^c	33.51\pm16.19^b	40.4\pm8.55^a
C18:2N6	0.95 \pm 0.43 ^c	5.84 \pm 1.44 ^a	1.22 \pm 1.01 ^b
C18:3N6	0.91 \pm 0.51 ^b	5.42 \pm 2.01 ^a	0.16 \pm 0.03 ^c
C18:3N3	0.21 \pm 0.36 ^b	0.07 \pm 0.07 ^c	1.55 \pm 0.58 ^a
C20:2	0.30 \pm 0.33 ^b	1.78 \pm 0.65 ^a	0.48 \pm 0.28 ^b
C20:3N6	0.06 \pm 0.03 ^c	5.79 \pm 2.82 ^a	0.43 \pm 0.47 ^b
C20:3N3	0.61 \pm 0.68 ^a	0.09 \pm 0.09 ^b	0.59 \pm 0.23 ^a
C20:4N6	1.06 \pm 0.40 ^a	0.03 \pm 0.03 ^c	0.62 \pm 0.51 ^b
C22:2	0.31 \pm 0.11 ^c	1.12 \pm 0.61 ^b	2.24 \pm 0.42 ^a
C20:5N3	8.83 \pm 0.82 ^a	4.18 \pm 1.03 ^c	5.15 \pm 1.37 ^b
C22:6N3	36.67 \pm 1.21 ^a	6.39 \pm 1.3 ^b	3.13 \pm 1.14 ^c
EPA+DHA	45.51\pm2.03^a	10.57\pm2.33^b	8.28\pm2.51^c
ΣPUFA	49.91\pm4.88^a	30.71\pm10.05^b	15.57\pm6.04^c
TFA	70.79\pm14.25^a	70.86\pm28.79^a	65.36\pm23.5^a

^{a-d} values in the same column with different lower-case letters are significantly different at $P < 0.05$.

Table S2. Fatty acids profiles of TG fraction in three fish heads. (g/100g, mean \pm S.D., n=3)

Fatty Acid	Big eye tuna	Atlantic salmon	Big head Carp
C4:0	2.07 \pm 1.01 ^b	20.89 \pm 7.32 ^a	1.75 \pm 1.08 ^c
C14:0	1.72 \pm 0.47 ^a	0.65 \pm 0.38 ^b	5.18 \pm 0.92 ^a
C15:0	N. D.	0.96 \pm 1.53 ^b	N. D.
C16:0	0.1 \pm 0.03 ^c	4.47 \pm 0.77 ^a	0.38 \pm 0.15 ^b
C17:0	1.02 \pm 0.04 ^a	0.03 \pm 0.00 ^d	N. D.
C18:0	N. D.	2.31 \pm 0.27 ^b	N. D.
C20:0	0.09 \pm 0.02 ^b	0.03 \pm 0.03 ^b	0.07 \pm 0.05 ^b
C22:0	0.08 \pm 0.02 ^b	0.03 \pm 0.00 ^b	0.23 \pm 0.10 ^a
C23:0	N. D.	0.01 \pm 0.01 ^c	N. D.
C24:0	2.78 \pm 0.65 ^b	N. D.	5.34 \pm 1.75 ^a
SFA	7.86\pm1.88^d	27.04\pm8.57^a	12.95\pm4.05^b
C14:1	0.83 \pm 0.23 ^a	0.02 \pm 0.01 ^c	1.68 \pm 0.48 ^a
C15:1	2.69 \pm 1.96 ^a	N. D.	3.62 \pm 3.86 ^a
C16:1	18.21 \pm 4.62 ^a	1.15 \pm 0.16 ^a	16.05 \pm 11.11 ^a
C17:1	2.2 \pm 0.52 ^b	N. D.	2.24 \pm 1.40 ^a
C18:1N9	14.85 \pm 3.62 ^a	24.47 \pm 9.34 ^a	16.6 \pm 4.79 ^a
C20:1	0.18 \pm 0.24 ^b	3.04 \pm 0.91 ^c	9.26 \pm 2.30 ^a
C22:1N9	0.15 \pm 0.04 ^a	N. D.	0.24 \pm 0.10 ^a
C24:1	N. D.	0.13 \pm 0.05 ^b	N. D.
MUFA	38.97\pm10.8^a	28.81\pm4.57^a	49.69\pm24.04^a
C18:2N6	0.54 \pm 0.15 ^c	11.10 \pm 1.45 ^a	4.00 \pm 3.05 ^b
C18:3N3	1.64 \pm 0.38 ^a	1.34 \pm 0.56 ^a	0.34 \pm 0.08 ^b
C18:3N6	0.08 \pm 0.05 ^b	N. D.	1.24 \pm 0.96 ^a
C20:2	0.25 \pm 0.07 ^c	0.89 \pm 0.22 ^a	1.07 \pm 0.54 ^a
C20:3N6	0.08 \pm 0.05 ^b	0.43 \pm 0.13 ^b	0.23 \pm 0.14 ^a
C20:3N3	1.94 \pm 0.46 ^a	0.93 \pm 0.01 ^a	3.96 \pm 1.58 ^a
C20:4N6	N. D.	0.15 \pm 0.03 ^b	N. D.
C22:2	0.18 \pm 0.05 ^a	0.36 \pm 0.01 ^a	1.25 \pm 0.93 ^a
C20:5	0.68 \pm 0.19 ^c	1.56 \pm 0.34 ^c	0.08 \pm 0.08 ^b
C22:6	24.47 \pm 5.92 ^a	1.81 \pm 0.26 ^c	5.29 \pm 2.38 ^b
EPA+DHA	25.15\pm6.11	3.37\pm0.6	5.37\pm2.46
PUFA	29.92\pm7.21^a	18.57\pm2.55^b	17.46\pm9.74^a
TFA	76.75\pm19.55^a	74.42\pm7.08^a	80.1\pm37.83^a

N. D., not detected.

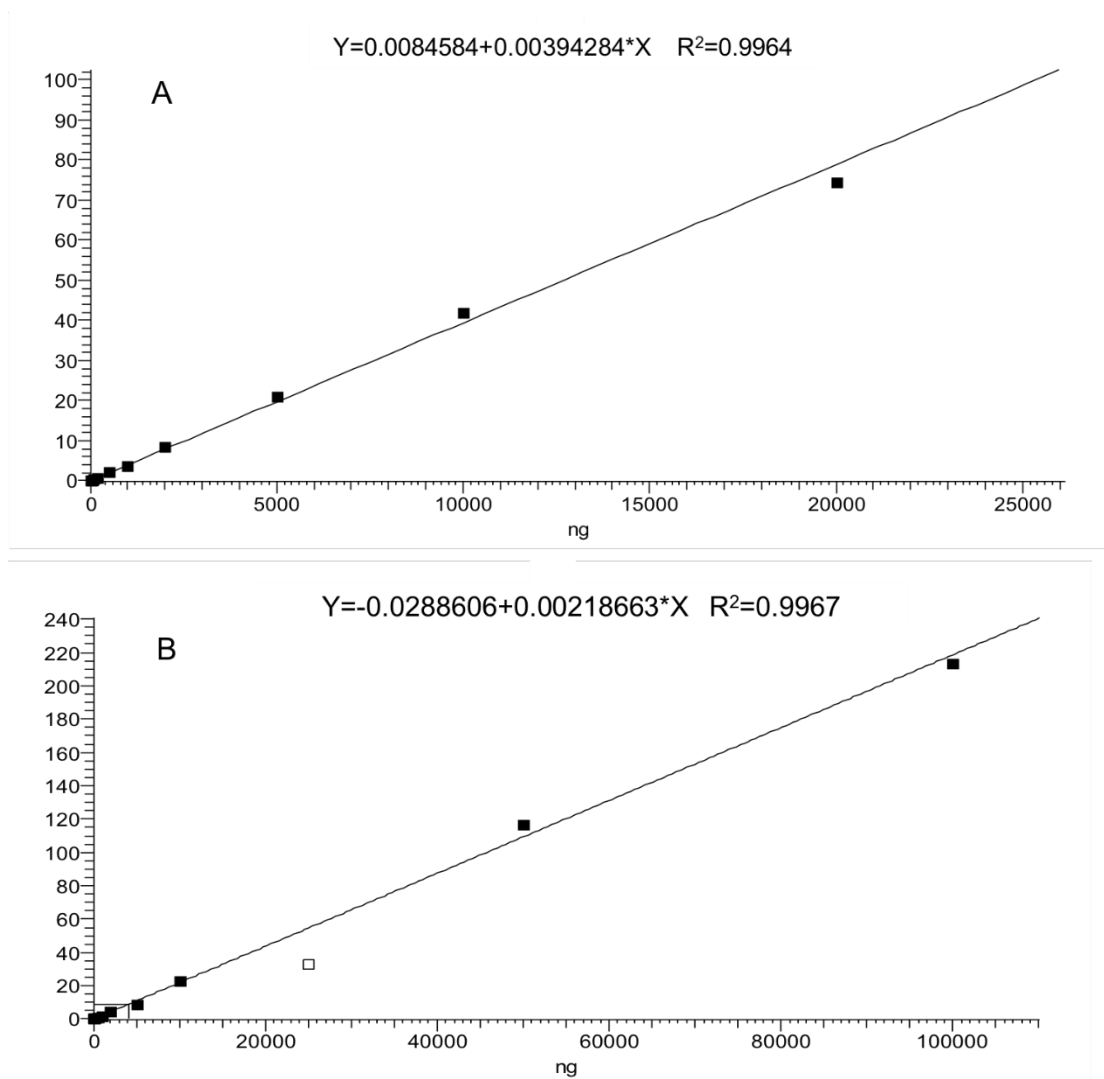


Figure S1. (A) Calibration curve of TG from big eye tuna head using TG (18:18:1/18:0) as external standard and TG (16:0/18:0/16:0)-d5 as the internal standard, a total of 13 points were prepared to cover the peak area ratio of internal standard and external standard, injection volume is 1 μ L. (B) Calibration curve of TG from Atlantic salmon and big head carp heads using TG (18:18:1/18:0) as external standard and TG (16:0/18:0/16:0)-d5 as the internal standard, a total of 13 points were prepared to cover the peak area ratio of internal standard and external standard, injection volume is 1 μ L.

