ELECTRONIC SUPPLEMENTARY MATERIAL

Table S1. Composition of fatty acids as a percentage of total fatty acid in neutral lipids (NL) or polar lipids (PL), expressed as mean ± standard deviation in brain and muscle of fish fed the standard n-3 HUFA diet (SH fish, n=11) and those fed the low n-3 HUFA diet (LH fish, n=12). NL and PL concentrations are presented in µg of FA per mg of tissue. AA: arachidonic acid, DHA, docosahexaenoic acid, DPA: docosapentaenoic acid, EPA: ecosapentenoic acid. The sums of Saturated Fatty Acids (SFA), Monounsaturated Fatty Acids (MUFA), Polyunsaturated Fatty Acids (PUFA), n-3 Highly Unsaturated Fatty Acids (EPA+DHA+DPA), n-3 and n-6 fatty acids and their ratio are also presented in percentage of total FA. The results of the two-way ANOVA and post-hoc Tukey test are presented by their significance level with .=0.05, *=0.01 **=0.001 and ***=0. Tuckey test: 2 different letters indicate significantly different means. Only FA that occur above 1 % in at least a treatment group are represented.

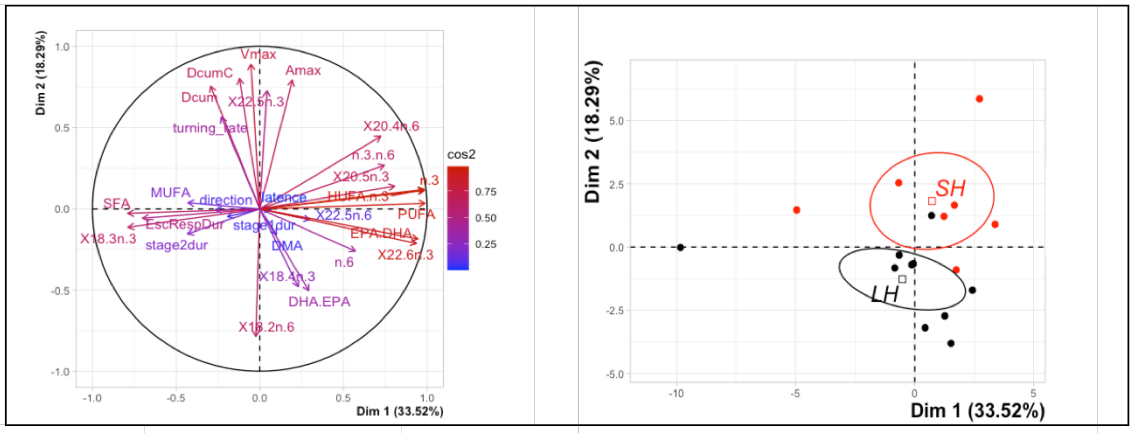
	Brain		Muscle		Statistics		
	SH	LH	SH	LH	Diet	Tissue	Diet x Tissue
NL	4.73±1.88	8.24±5.06	5.97±3.47	5.61±2.46	ns	ns	ns
14:0	3.1±0.6[a]	3.0±0.2[a]	4.0±0.5[b]	2.8±0.5[a]	***	*	***
15:0	6.6±1.4	7.0±1.1	4.3±1.5	4.0±2.1	ns	***	ns
16:0	17.8±1.7	16.7±1.5	21.3±4.2	18.0±2.6	**	**	ns
17:0	1.1±0.1	1.0±0.2	0.7±0.2	0.5±0.2	*	***	ns
18:0	6.0±3.3	4.2±1.0	3.0±0.7	2.4±0.3	*	***	ns
24:0	0.6±0.4	0.5±0.3	0.2±0.4	0.1±0.2	ns	***	ns
∑ SFA	35.3±3.8	32.8±2.9	33.9±6.7	28.3±4.9	ns	**	ns
16:1n-7	8.6±2.2	8.3±1.5	9.4±1.1	7.5±1.8	*	ns	ns
17:1n-7	5.7±1.7	5.7±1.7	3.8±1.3	3.5±1.8	ns	***	ns
18:1n-9	10.5±3.7	15.1±4.5	20.5±3.6	30.6±7.3	***	***	.
18:1n-7	2.4±0.9	2.4±0.4	3.3±0.3	3.0±0.2	ns	***	ns
20:1n-9	0.9±0.9	1.0±0.9	1.2±0.4	1.3±0.5	ns	ns	ns
22:1n-7	0.6±0.3	0.5±0.3	0.6±0.2	0.5±0.2	ns	ns	ns

24:1n-7	1.1±1.5	1.1±1.2	0.1±0.2	0.2±0.2	ns	**	ns
∑ MUFA	30.3±6.6	35.2±5.1	40.4±2.0	48±3.6	***	***	ns
16:3n-4	1.6±0.9	1.6±0.8	0.9±0.4	0.9±0.5	ns	**	ns
16:3n-6	1.0±0.5	0.9±0.5	0.6±0.3	0.5±0.3	ns	**	ns
18:2n-9	0.6±0.3^{a}	0.7±0.4^{a}	0.7±0.2^{a}	1.2±0.3^{b}	**	**	*
18:2n-6	1.3±0.6^{a}	2.7±1.7^{a}	3.4±1.6^{a}	7.7±3.5^{b}	***	***	*
18:3n-3	0.5±0.4^{a}	1.3±0.8^{a}	1.5±0.7^{a}	3.4±1.5^{b}	***	***	*
18:4n-3	2.8±5.6	1.8±1.9	0.5±0.5	0.5±0.4	ns	*	ns
20:4n-6 (AA)	2.5±1.2	1.9±1.5	0.7±0.2	0.4±0.1	.	*	ns
20:5n-3 (EPA)	6.7±1.1	5.4±1.2	4.8±1.7	2.3±1.2	***	***	
22:5n-6	0.0±0.0	0.0±0.1	0.2±0.1	0.0±0.1	*	**	**
22:5n-3	1.7±0.9^{ab}	1.5±1.0^{a}	1.9±0.4^{a}	0.9±0.3^{b}	*	ns	.
22:6n-3 (DHA)	7.5±2.6	4.9±1.6	5.4±1.9	1.6±0.4	***	***	ns
∑ EPA+DHA	14.2±2.5	10.3±2.1	10.1±3.2	3.9±1.6	***	***	ns
DHA/EPA	1.2±0.5	0.9±0.3	1.2±0.4	0.8±0.3	**	ns	ns
∑ n-3	19.6±6.0	15.4±3.2	14.3±4.1	8.9±1.5	***	***	ns
∑ n-6	5.3±1.0^{a}	6.6±2.1^{a}	5.2±1.9^{a}	9.1±3.1^{b}	***	.	.
∑ PUFA	28.2±7.4	25.4±4.3	21.9±5.9	20.5±3.4	***	***	ns
n-3 HUFA	15.9±2.4^{a}	11.8±2.4^{c}	12.0±3.6^{c}	4.8±1.8^{b}	***	***	*
n-3/n-6	3.7±0.6	2.5±0.8	2.8±0.6	1.1±0.5	***	***	ns
DMA	0.2±0.5	0.1±0.1	0.0±0.1	0.0±0.0	ns	ns	ns
PL	14.99±4.10	16.15±3.29	3.74±0.93	3.30±1.21	***	ns	ns
14:0	0.1±0.1	0.1±0.0	0.3±0.2	0.7±1.1	ns	*	ns
15:0	0.5±0.1^{a}	0.5±0.1^{a}	1.0±0.3^{a}	1.7±1.0^{b}	*	***	*
16:0	15.4±1.8	14.6±1.2	18.5±2.5	21.2±7.6	ns	***	ns
17:0	0.9±0.1	1.0±0.2	0.8±0.3	0.1±0.6	ns	ns	ns

18:0	13.5±2.2	13.4±2.3	9.8±1.3	9.9±5.0	ns	***	ns
24:0	2.3±2.5	3.3±1.5	0.2±0.2	0.4±0.3	ns	***	ns
∑ SFA	33.3±3.5	33.7±4.5	30.9±4.0	35.3±12.6	ns	ns	ns
16:1n-7	1.4±0.1	1.3±0.2	0.8±0.2	1.9±2.6	ns	ns	ns
17:1n-7	1.8±0.4	1.8±0.2	1.3±0.3	1.7±0.6	ns	*	ns
18:1n-9	19.7±1.3[a]	19.9±1.2[a]	11.4±1.5[b]	19.3±6.9[a]	***	***	**
18:1n-7	1.9±0.2	1.6±0.5	2.9±0.2	2.8±0.3	*	***	ns
20:1n-9	0.4±0.1[a]	0.4±0.0 [a]	1.0±0.2[b]	1.4±0.3[c]	***	***	**
22:1n-7	1.3±0.3	1.3±0.2	1.4±0.3	1.4±0.7	ns	ns	ns
24:1n-7	2.6±0.9	2.4±0.6	0.4±0.2	0.3±0.2	ns	***	ns
∑ MUFA	26.8±1.9	26.9±1.5[a]	18.9±1.5[b]	28.8±9.8[a]	**	.	**
16:3n-4	0.0±0.0	0.0±0.0	0.0±0.0	0.1±0.3	ns	ns	ns
16:3n-6	0.0±0.0	0.0±0.0	0.1±0.1	0.1±0.1	ns	ns	ns
18:2n-9	1.0±0.1	1.1±0.1	0.4±0.3	0.8±0.3	***	***	.
18:2n-6	0.3±0.1[a]	0.7±0.1[a]	1.7±0.8[a]	4.9±2.5[b]	***	***	**
18:3n-3	0.1±0.1[a]	0.1±0.1[a]	0.2±0.2[a]	1.4±1.1[b]	***	***	***
18:4n-3	0.0±0.1	0.1±0.0	0.0±0.1	0.1±0.1	ns	ns	ns
20:4n-6 (AA)	1.9±0.2[a]	1.5±0.3[a]	4.2±0.3[b]	2.3±1.5[a]	***	***	**
20:5n-3 (EPA)	2.4±0.4[a]	2.1±0.4[a]	9.8±1.0[b]	5.7±3.6[c]	***	***	**
22:5n-6	0.2±0.2[a]	0.3±0.1[a]	1.3±0.3[b]	0.9±0.5[c]	*	***	*
22:5n-3	2.3±2.3	0.8±0.5	5.6±0.5	4.0±2.1	**	***	ns
22:6n-3 (DHA)	21.0±3.8[a]	21.9±4.2[a]	20.8±2.2[a]	10.1±6.8[b]	***	***	***
∑ EPA+DHA	23.3±4.1[a]	24.1±4.5[ab]	30.6±2.6[b]	15.8±10.3[c]	***	ns	***
DHA/EPA	8.9±1.1[a]	10.4±1.3[b]	2.1±0.3[c]	1.6±0.5[c]	ns	***	***
∑ n-3	25.7±3.6[a]	25.1±4.6[a]	36.8±3.0[b]	21.6±11.9[a]	***	ns	***
∑ n-6	3.2±0.3	3.2±0.3	8.0±1.1	8.9±3.1	ns	***	ns

∑ PUFA	30.0±3.8[a]	29.8±5.1[a]	45.6±3.6[b]	31.6±14.0[a]	**	***	**
n-3 HUFA	25.6±3.7[a]	24.9±4.7[a]	36.2±2.8[b]	19.8±12.4[a]	***	ns	***
n-3/n-6	8.2±1.1[c]	7.7±1.3[c]	4.6±0.8[b]	2.3±1.1[a]	***	***	**
DMA	5.8±1.2	5.7±0.8	2.2±0.5	1.5±1.0	ns	***	ns

A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Amax
Dcum
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X20.4n.6
n.3.n.6
X20.5n.3
n.3
MUFA
direction
latence
HUFA.n.3
SFA
X22.5n.6
PUFA
EscRespDur
stage1dur
X18.3n.3
stage2dur
DMA
EPA.DHA
X22.6n.3
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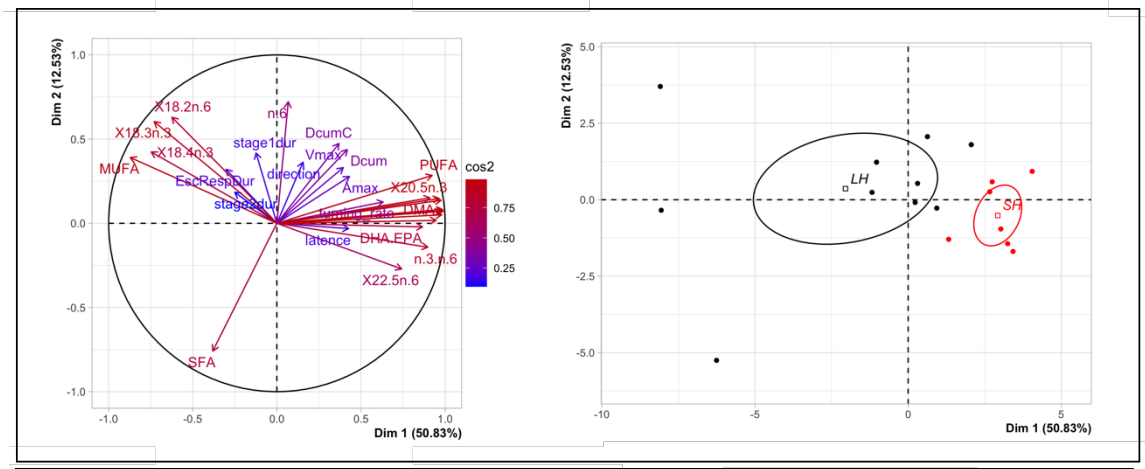
SH
LH

B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stage1dur
X18.4n.3
Vmax
Dcum
PUFA
MUFA
EscRespDur
direction
Amax
X20.5n.3
stage2dur
DMA
latence
DHA.EPA
n.3.n.6
X22.5n.6
SFA
cos2
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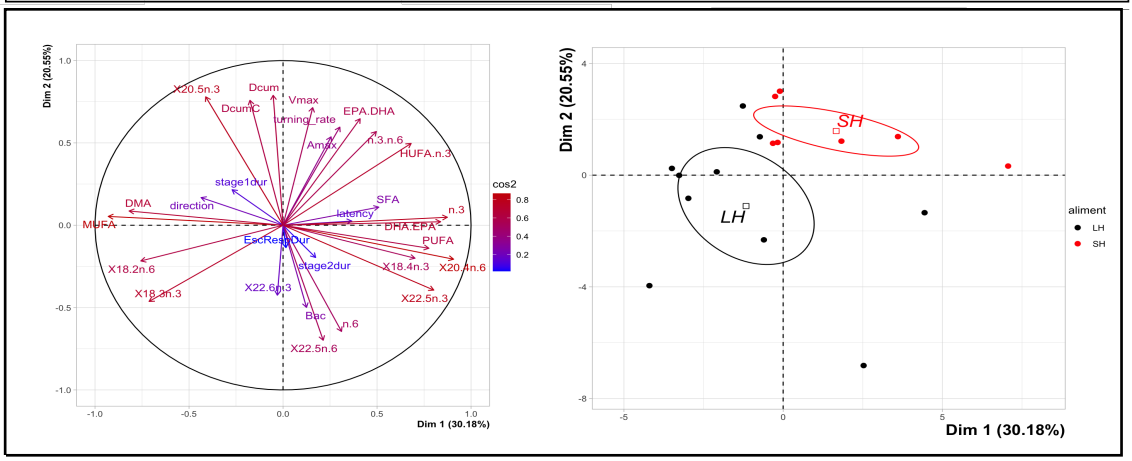
0.50
0.25
LH
SH

C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Dim 1 (30.18%)
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Vmax
DcumC
turning_rate
EPA.DHA
Amax
n.3.n.6
HUFA.n.3
stage1dur
DMA
direction
SFA
latency
n.3
MUFA
DHA.EPA
EscRespDur
PUFA
X18.2n.6
stage2dur
X18.4n.3
X20.4n.6
X18.3n.3
X22.6n.3
X22.5n.3
Bac
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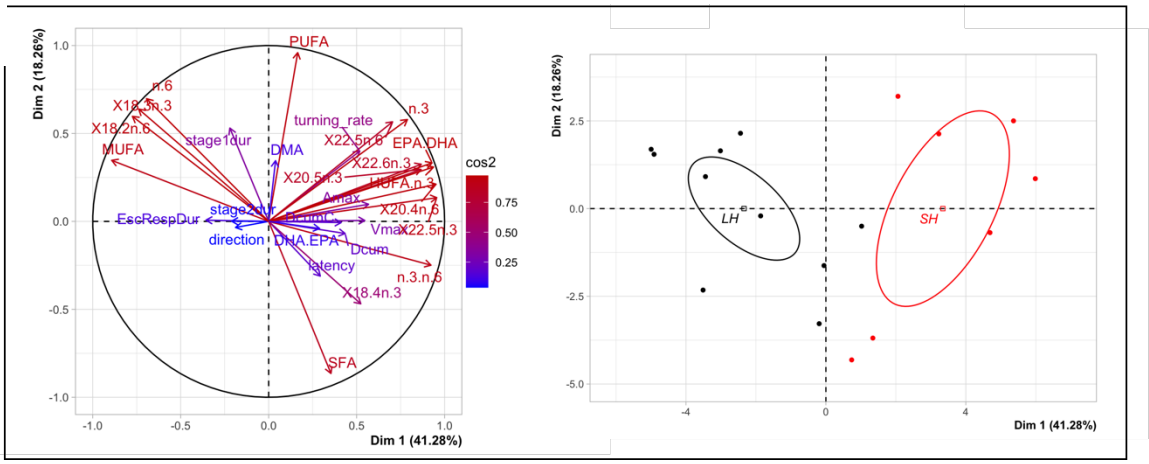
0.6
0.4
0.2
aliment
LH
SH

D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turning_rate
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X18.2n.6
X22.5n.6
EPA.DHA
MUFA
stage1dur
DMA
X22.6n.3
X20.5n.3
HUFA.n.3
Amax
X20.4n.6
stage2dur
EscRespDur
DcumC
Vmax
X22.5n.3
direction
DHA.EPA
Dcum
latency
n.3.n.6
X18.4n.3
SFA
cos2
0.75
0.50
0.25
LH
SH

Figure S2: PCA performed on all individuals, and considering as variables the escape response variables excluding responsiveness, and fatty acid composition of brain polar lipid (A), muscle polar lipids (B), brain neutral lipids (C), muscle neutral lipids (D) of the mullet fed two contrasted diets (LH diet: Low n-3 HUFA diet, n = 10; SH diet: Standard n-3 HUFA diet, n = 7).

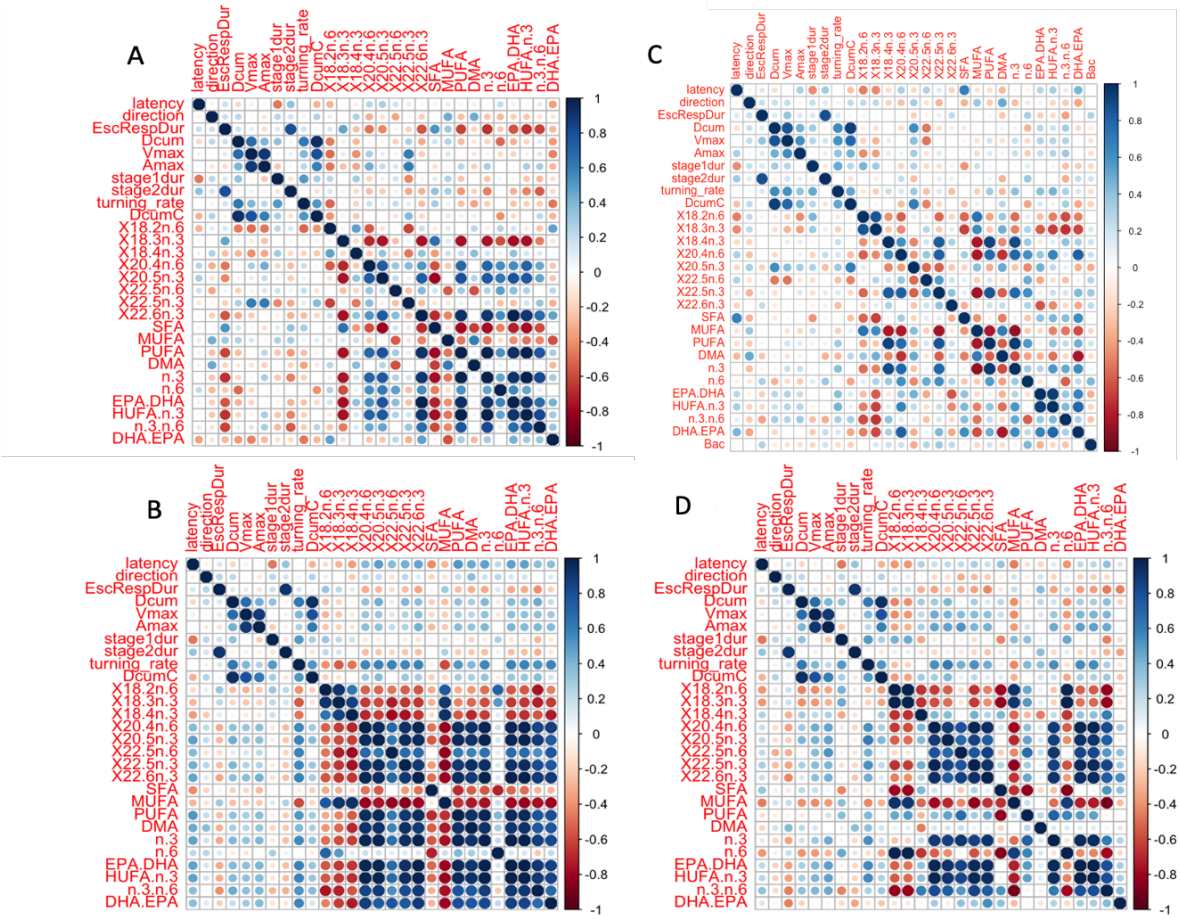

Figure S3: Correlation maps including all escape responses variables measured, excluding responsiveness, and fatty acid content in polar lipid of brain (A), polar lipid of muscle (B), neutral lipid of brain (C) and and neutral lipid of muscle (D) of both experimental groups (LH diet: Low n-3 HUFA diet, n = 10; SH diet: Standard n-3 HUFA diet, n = 7).