

APPENDIX A. Supplementary Data.

Table S1. Water parameters in the study.

Parameter	Level measured	Optimal level	Tolerance levels	Measurement tool
Oxygen (O_2) (ppm)	6.95±0.21	> 6	4 - 12	Oxyguard handy polaris
Temperature ($^{\circ}C$)	30.18±0.48	27-30	26 - 30	Extech Instruments – 39240 Digital thermometer
Salinity (‰)	25.15±0.46	25	0.5 - 45	Refractometer
pH	7.21±0.11	7.5-8.5	6.5 - 8.5	Oxyguard pH Visocolor® ECO
Ammonia (NH_4^+) (ppm)	0.58±0.08	< 0.8	1	Ammonium; Macherey-Nagel GmbH, Germany
Ammonium (NH_3^-) (ppm)	0.006	< 0.01	0.1	Calculation
Nitrite (NO_2^-) (ppm)	0.54±0.14	< 0.25	< 20	Visocolor® ECO Nitrite; Macherey-Nagel GmbH, Germany
Nitrate (NO_3^-)(ppm)	70.23±19.87	0.5 - 20	60	Visocolor® ECO Nitrate; Macherey-Nagel GmbH, Germany

Table S2. Collective performance parameters of whiteleg shrimp fed the attractive diets for 24 days.

Survival	IBW	CV	FBW	CV	BW	GR	SGR	FI	FI/day	RFR	FCR
	IBW		FBW		gain						
(%)	(g ind. ⁻¹)	(%)	(g ind. ⁻¹)	(%)	(g ind. ⁻¹)	(g ind. ⁻¹)	(%BW d ⁻¹)	(g ind. ⁻¹)	(g ind. ⁻¹)	(%BW d ⁻¹)	(g g ⁻¹)
99.6	3.67	11.29	10.46	15.68	6.79	0.27	4.18	11.89	0.48	7.67	1.76
±0.01	±0.01	±1.47	±0.56	±3.30	±0.56	±0.02	±0.21	±0.77	±0.03	±0.33	±0.07

IBW: initial body weight; CV: coefficient of variation; FBW: final body weight; BW: body weight; GR: growth rate (also known as average daily gain); SGR: specific growth rate; FI: feed intake; RFR: relative feeding rate; FCR: feed conversion ratio.

Performances from the 36 experimental units were measured and reported in the table above. Values are presented as mean ± standard deviation.

Table S3. Feed intake and moisture contents for each diet, with values presented in grams (g).

Treatment		Low fish meal						High fish meal					
		CTRL	CH2	CH4	CH6	KM2	KM3	CTRL	CH2	CH4	CH6	KM2	KM2
Date	Day	Diet 1	Diet 2	Diet 3	Diet 4	Diet 5	Diet 6	Diet 7	Diet 8	Diet 9	Diet 10	Diet 11	Diet 12
13.jul	0	0.19	0.17	0.18	0.25	0.18	0.18	0.26	0.18	0.23	0.19	0.17	0.23
14.jul	1	0.19	0.20	0.18	0.22	0.17	0.17	0.22	0.22	0.22	0.20	0.23	0.24
15.jul	2	0.25	0.22	0.24	0.30	0.22	0.24	0.24	0.26	0.27	0.27	0.27	0.26
16.jul	3	0.31	0.27	0.28	0.27	0.27	0.28	0.27	0.22	0.27	0.27	0.28	0.26
17.jul	4	0.30	0.28	0.29	0.28	0.26	0.27	0.29	0.31	0.30	0.35	0.34	0.31
18.jul	5	0.34	0.31	0.31	0.33	0.35	0.31	0.29	0.36	0.37	0.40	0.37	0.36
19.jul	6	0.39	0.39	0.39	0.38	0.36	0.40	0.35	0.41	0.41	0.40	0.39	0.39
20.jul	7	0.38	0.41	0.47	0.40	0.41	0.40	0.38	0.43	0.39	0.43	0.40	0.34
21.jul	8	0.42	0.45	0.39	0.45	0.42	0.41	0.38	0.46	0.48	0.46	0.41	0.45
22.jul	9	0.41	0.49	0.47	0.43	0.46	0.42	0.43	0.45	0.48	0.49	0.46	0.46
23.jul	10	0.46	0.48	0.50	0.50	0.45	0.48	0.49	0.49	0.47	0.54	0.53	0.48
24.jul	11	0.47	0.47	0.51	0.52	0.48	0.48	0.49	0.52	0.54	0.60	0.48	0.55
25.jul	12	0.51	0.54	0.52	0.59	0.52	0.50	0.54	0.50	0.60	0.58	0.47	0.58
26.jul	13	0.52	0.54	0.55	0.56	0.51	0.50	0.57	0.57	0.66	0.63	0.56	0.58
27.jul	14	0.54	0.49	0.58	0.64	0.54	0.57	0.54	0.59	0.64	0.57	0.61	0.58
28.jul	15	0.58	0.60	0.63	0.60	0.58	0.56	0.55	0.55	0.63	0.63	0.58	0.56
29.jul	16	0.57	0.58	0.61	0.59	0.54	0.58	0.59	0.60	0.64	0.69	0.62	0.63
30.jul	17	0.61	0.60	0.62	0.63	0.60	0.65	0.57	0.63	0.62	0.68	0.64	0.61
31.jul	18	0.63	0.63	0.71	0.66	0.63	0.69	0.61	0.74	0.70	0.72	0.66	0.63
01.aug	19	0.61	0.67	0.73	0.74	0.61	0.71	0.65	0.74	0.70	0.67	0.68	0.61
02.aug	20	0.66	0.63	0.66	0.70	0.62	0.63	0.62	0.70	0.74	0.71	0.61	0.69
03.aug	21	0.66	0.73	0.68	0.73	0.73	0.70	0.70	0.70	0.77	0.78	0.73	0.69
04.aug	22	0.65	0.70	0.70	0.69	0.67	0.71	0.66	0.70	0.76	0.78	0.72	0.71
05.aug	23	0.68	0.70	0.76	0.80	0.64	0.69	0.69	0.73	0.74	0.81	0.76	0.77
06.aug	24	0.71	0.68	0.74	0.82	0.71	0.72	0.73	0.71	0.78	0.79	0.65	0.76
Sum:		11.86	12.05	12.50	12.85	11.75	12.05	11.85	12.60	13.18	13.45	12.46	12.49
Moisture content feed		7.6	7.3	6.7	6.9	5.8	5.2	6.3	6.4	6.8	7.7	7.6	7.6

CTRL: Control; CH2: Diet with 2 % calanus hydrolysate; CH4: Diet with 4 % calanus hydrolysate; CH6: Diet with 6 % calanus hydrolysate; KM2: Diet with 2 % krill meal; KM3: Diet with 3 % krill meal.

Table S4. Summary of Kruskal-Wallis non-parametrical test, for low fish meal group.

Prior condition: Test		Df	Statistic	P-value
Normality: Shapiro-Wilk			w=0.95275	P=0.4698
Homoscedasticity: Breusch-Pagan		6	BP=9.625	P=0.1414
Independance: Durbin-Watson			DW=0.67997	P=0.005266
Kruskal-Wallis Table	n	Df	Chi-squared (X ²)	P-value
	36	6	12.396	P=0.05369

Table S5. Summary of one-way ANOVA, for high fish meal diet group.

Prior condition: Test			Df	Statistic	P-value
Normality: Shapiro-Wilk				w=0.92189	P=0.1396
Homoscedasticity: Breusch-Pagan			5	BP=9.6388	P=0.08614
Independance: Durbin-Watson				DW=1.8471	P=0.4737
ANOVA table	Df	Sum Square	Mean Square	F(DFn, DFd)	P-value
Treatment (between colums)	5	304.9	60.98	F(5,12)=44.19	P=2.56e ⁻⁰⁷
Residuals (within colmunns)	12	16.56	1.38		
Total	17	321.46			

Table S6. Simple linear regression (response curve), by ingredient wet weight inclusion.

	CH	KM
Best-fit values		
Slope	1,873	1,287
Y-intercept	0,000	0,000
X-intercept	0,000	0,000
1/slope	0,5339	0,7771
Std. Error		
Slope	0,09807	0,05872
Y-intercept		
95% Confidence Intervals		
Slope	1,561 to 2,185	1,034 to 1,540
Y-intercept	0,000 to 0,000	0,000 to 0,000
X-intercept	-1,153 to 0,9820	-0,7714 to 0,6378
Goodness of Fit		
Sy.x	0,7339	0,2117
Is slope significantly non-zero?		
F	364,8	480,2
DFn, DFd	1, 3	1, 2
P value	0,0003	0,0021
Deviation from zero?	Significant	Significant

Equation	$Y = 1,873 \cdot X + 0,000$	$Y = 1,287 \cdot X + 0,000$
-----------------	-----------------------------	-----------------------------

Table S7. Simple linear regression (response curve), by ingredient dry weight inclusion.

	CH	KM
Best-fit values		
Slope	3,514	1,406
Y-intercept	0,000	0,000
X-intercept	0,000	0,000
1/slope	0,2846	0,7112
Std. Error		
Slope	0,1840	0,06418
Y-intercept		
95% Confidence Intervals		
Slope	2,929 to 4,100	1,130 to 1,682
Y-intercept	0,000 to 0,000	0,000 to 0,000
X-intercept	-0,5767 to 0,4910	-0,7717 to 0,6379
Goodness of Fit		
Sy.x	0,6885	0,2314
Is slope significantly non-zero?		
F	364,8	480,0
DFn, DFd	1, 3	1, 2
P value	0,0003	0,0021
Deviation from zero?	Significant	Significant
Equation	$Y = 3,514 \cdot X + 0,000$	$Y = 1,406 \cdot X + 0,000$

Table S8. Molecular weight distribution of calanus hydrolysate (CH).

Molecular weight	% protein
< 20 000	0.1
6 000 – 20 000	0.6
1 000 – 6 000	12.2
200 – 1000	34.7
< 200	52.5