

Supplementary Information

Table S1. Composition and nutrient levels of the basal diet (air-dry basis, %)

Ingredients	Phase	
	25-50 kg	> 50 kg
Corn	73.610	70.525
Soybean meal	17.900	6.500
Fish meal	2.700	-
Rapeseed dregs	-	6.500
DDGS	-	8.000
Wheat bran	-	1.000
Corn oil	2.000	3.000
Fish oil	1.000	2.000
CaHPO ₄	0.670	0.550
Limestone	0.930	0.900
NaCl	0.300	0.200
L-lysine HCl	0.440	0.470
DL-Methionine	0.100	0.030
L-Threonine	0.120	0.090
L-Tryptophan	0.030	0.035
Premix ¹	0.200	
Premix ²		0.200
Total	100	100
Nutrient composition		
DE (Mcal/kg)	3.40	3.48
CP (%)	15.69	13.64
Ca (%)	0.66	0.53
AP (%)	0.31	0.24
SID Lys (%)	0.98	0.74
SID Met+cys (%)	0.54	0.43
SID Thr (%)	0.59	0.47
SID Trp (%)	0.17	0.14

Note: (1) Premix¹ for 25-50 kg pig provided (per kg): Cu (CuSO₄·5H₂O), 4 mg; I (KI), 0.14 mg; Fe (FeSO₄·7H₂O), 60 mg; Mn (MnSO₄·H₂O), 2 mg; Zn (ZnSO₄·H₂O), 60 mg; 50% Choline chloride, 75 mg; Vitamin A, 1500 IU; Vitamin D3, 500 IU; Vitamin E, 4 mg; Vitamin K3, 0.5 mg; Vitamin B1, 0.5 mg; Vitamin B2, 1.25 mg; Vitamin B6, 0.6 mg; Vitamin B12, 6 µg; D-biotin, 25 µg; D-pantothenic acid, 2.5 mg; Folic acid, 0.25 mg; Nicotinamide, 5 mg.

(2) Premix² for > 50 kg pig provided (per kg): Cu (CuSO₄·5H₂O), 7 mg; I (KI), 0.2 mg; Fe (FeSO₄·7H₂O), 100 mg; Mn (MnSO₄·H₂O), 4 mg; Zn (ZnSO₄·H₂O), 50 mg; 50% Choline chloride, 200 mg; Vitamin A, 450 IU; Vitamin D3, 150 IU; Vitamin E, 1.2 mg; Vitamin K3, 0.15 mg; Vitamin B1, 0.15 mg; Vitamin B2, 0.375 mg; Vitamin B6, 0.18 mg; Vitamin B12, 1.8 µg; D-biotin, 7.5 µg; D-pantothenic acid, 0.75 mg; Folic acid, 75 µg; Nicotinamide, 1.5 mg.

Table S2 The oxidation Characteristics of the diets

Item	CON	DOS	DOS + 0.3 Se	DOS + 0.6 Se	DOS + 0.9 Se
Diet for 25-50 kg					
AV (mg KOH/100 g)	56.70	238.90	238.40	233.30	240.20
POV (mmol O ₂ /kg)	19.60	433.60	415.70	429.20	414.60
IV (g I/100 g)	126.70	81.20	83.90	83.50	82.10
SV (mg KOH/g)	182.10	237.70	240.60	248.30	242.70
Diet for > 50 kg					
AV (mg KOH/100 g)	68.00	252.60	253.70	264.60	257.40
POV (mmol O ₂ /kg)	31.80	519.20	523.60	537.80	534.20
IV (g I/100 g)	111.70	73.40	73.60	74.70	72.80
SV (mg KOH/g)	195.40	261.30	265.70	268.20	266.70

AV, acid value; POV, peroxide value; IV, iodine value; SV, saponification value.

Table S3. Primers used for the Q-PCR

Gene	Accession number	Primer pairs (5' to 3' direction)
Housekeeping control genes		
<i>β-Actin</i>	AY550069	F:CCCAAAGCCAACCGTGAGAA R:CCACGTACATGGCTGGGGTG
<i>Gapdh</i>	NM_001206359	F:CAGCAATGCCTCCTGTACCA R:CCACGATGCCGAAGTTGTC
Lipid metabolic-related genes		
<i>ACACA</i>	NM_001114269.1	F:CAAGACCACCAACGCGAAA R:GGCAAATGGGAGGCAATAAGA
<i>FASN</i>	NM_001099930	F:CAAGCAGGCGAACACGATG R:AAGGGAAGCAGGGTTGATGC
<i>SCD</i>	NM_213781.1	F:CAAACACCCAGCCGTCAAAG R:AGCTTCACCCAGCAATACC
<i>DGAT1</i>	NM_214051.1	F:ACAAGGACAAGGACGGACAC R:ATGCCACGGTAGTTGCTGAA
<i>DGAT2</i>	NM_001160080.1	F:ATGCCCTACTCCAAGCCCA R:CCGAACTTGGTCTTGTGCTG
<i>G6PD</i>	XM_003360515.5	F:TGGTGGCTGTTCCGAGATG R:GGCGTAGCCACGATGTATG
<i>SREBP1c</i>	NM_214157.1	F:AAGCGGACGGCTCACAATG R:GCAAGACGGCGGATTTATTCA
<i>CPT1a</i>	NM_001129805.1	F:TGGTGTCCAAATACCTCGCC R:CCTCCGCTCGACACATACTC
<i>CPT1b</i>	NM_001007191.1	F:GCGCCGCGTGAAAGC R:GATCCCAGTCCCGGTCATG
<i>CPT2</i>	NM_001246243.1	F:CGAGTGTTCCGAGTACCACAA R:CAAGTGTCGGTCAAAGCCCT
<i>HSL</i>	NM_214315	F:CTCGTGGCTCAACTCCTTCCT

<i>LIPC</i>	NM_001143714.1	R:GCCGCATTGGCTCTTCTGT F:AGCAGGAGAAACCCAGCAAA R:CCTGGGTTGGGTGAAGTTGT
<i>ATGL1</i>	NM_001098605.1	F:CAAGAGCACCATCACCGTGTCC R:AGGCCGTCCCTGTAACCCT
<i>ACAA1</i>	XM_021071664.1	F:TCTGCGTGGGAAATGTGCTT R:CTCAGAAACTGGGCGATTCTG
<i>ACAA2</i>	NM_001167638.1	F:TCGTGGGCTATTTTTCGTCT R:TCCTGCTTTCTTCAGTGCCC
<i>ACOX1</i>	NM_001101028.1	F:GCCGCCGAGAGATCGAAA R:GGATGTCCTCGCTGCACAAA
<i>ACADL</i>	NM_213897.1	F:GCGTGGCTTATGACTGTGTG R:ACTCGGGCATCCACATAAGC
<i>ECH1</i>	NM_001044607.2	F:GCTAAACCGGCCAGAGAAGA R:AGATGTCCGAAGCCATGTCC
Endoplasmic reticulum stress biomarkers		
<i>PERK</i>	XM_003124925.4	F:CTGTACCCATTTCGGCACTCA R:ATGTCCTGCACCATCGCAAA
<i>eIF2α</i>	XM_001928339.4	F:AATAGGCGTTTGACCCACACA R:TGTTCTCTCCAGGGTGGTTG
<i>ATF4</i>	NM_001123078.1	F:ATGCCCTGTTCGGGTATAGATGA R:ATCCAACGTGGCCAAAAGC
<i>CHOP</i>	NM_001144845.1	F:GGAAATGAGGAGGAGTCAAAAACC R:CTCAGTCAGCCAAGCCAGAGA
<i>IRE1</i>	XM_005668695.3	F:CTGAGCGAAGACTGCAAGGA R:GAGTATGTTGGCCTGACGCT
<i>XBP-1</i>	NM_001142836.1	F:CAGACTGCCAGAGACCGAAAGA R:TCTTCCAAATCTACCACTTGTTGCT
<i>ATF6</i>	XM_021089516.1	F:GGGAGTGAGCTGCAGGTGTATT R:TCTGCGGATGGCTTCAAAGA
<i>GRP78</i>	XM_001927795.7	F:TGGGAAAGAAGGTTACTCATGCA R:CTGGCGTTGGGCATCATT
Selenoprotein-encoding genes		
<i>DIO1</i>	NM_001001627	F:CATGGCCAAGAACCCTCACT R:CCAGAAATACTGGGCACTGAAGA
<i>DIO2</i>	NM_001001626	F:CGCTGCATCTGGAAGAGCTT R:TGGAATTGGGTGCATCTTCA
<i>DIO3</i>	NM_001001625	F:TGAAGTGGAGCTCAACAGTGATG R:TGTCGTCAGACACGCAGATAGG
<i>GPX1</i>	NM_214201	F:GATGCCACTGCCCTCATGA R:TCGAAGTTCCATGCGATGTC
<i>GPX2</i>	NM_001115136	F:AGAATGTGGCCTCGCTCTGA R:GGCATTGCAGCTCGTTGAG
<i>GPX3</i>	NM_001115155	F:CCGGTTCCTGTTTTCCAAATT R:TGCACTGCAGGAAGAGTTTGAA
<i>GPX4</i>	NM_214407	F:TGAGGCAAGACGGAGGTAAACT R:TCCGTAAACCACACTCAGCATATC
<i>GPX6</i>	NM_001137607	F:GAGCTGAAGCCTTTTGGTGTAGTT

<i>MSRBI</i>	NM_001097460	R:CTTTGCTGGTTCTTGTTTTCCA F:ATCCCTAAAGGCCAAGAATCATC R:GGCCACCAAGCAGTGTTCA
<i>SELENOF</i>	NM_001085443	F:ACAGCCCTGCCAAGCAGAT R:AACAGGGAGGCTGGGTAACAC
<i>SELENOH</i>	NM_001184948	F:TGGTGGAGGAGCTGAAGAAGTAC R:CGTCATAAATGCTCCAACATCAC
<i>SELENOI</i>	NM_001244662	F:GATGGTGTGGATGGAAAGCAA R:GCCATGGTCAAAGAGTTCTCCTA
<i>SELENOK</i>	NM_001044553	F:CAGGAAACCCCCCTAGAAGAA R:CTCATCCACCGGCCATTG
<i>SELENOM</i>	NM_001161648	F:CAGCTGAATCGCCTCAAAGAG R:GAGATGTTTCATGACCAGGTTGTG
<i>SELENON</i>	XM_021095600	F:ACCTGGTCCCTGGTGAAAGAG R:AGGCCAGCCAGCTTCTTGT
<i>SELENOO</i>	NM_001201431	F:CTTCCGACCCAGATGGAT R:GGTTGCGACTGTGCCAGCAT
<i>SELENOP</i>	NM_001134823	F:AACCAGAAGCGCCAGACACT R:TGCTGGCATATCTCAGTTCTCAGA
<i>SELENOS</i>	NM_001164113	F:GAGGCAGAGGCACCTGGAT R:CTGCTAAAGCCTCCTGTCGTTT
<i>SELENOT</i>	NM_001163408	F:GGCTTAATAATCGTTGGCAAAGA R:TGGCCCCATTGCCAGATA
<i>SELENOV</i>	NM_001166045	F:CACTGGTCGCCAATGGATTC R:AGTGGCCAACGGAGAAAGC
<i>SELENOW</i>	NM_213977	F:CACCCCTGTCTCCCTGCAT R:GAGCAGGATCACCCCAAACA
<i>SEPHS2</i>	NM_001093735	F:TGGCTTGATGCACACGTTTAA R:TGCGAGTGTCCCAGAATGC
<i>TXNRD1</i>	NM_214154	F:GATTTAACAAGCGGGTCATGGT R:CAACCTACATTACACACGTTCT
<i>TXNRD2</i>	NM_001168702	F:TCTTGAAAGGCGGAAAAGAGAT R:TCGGTCGCCCTCCAGTAG
<i>TXNRD3</i>	XM_013982024	F:GTGCCCTACGTTTATGCTGTTG R:TCCGAGCCACCAGCTTTG

Table S4. The correlation analysis between the major selenoprotein-encoding genes and lipid metabolism markers

Correlations																											
		GPX1	GPX4	SELENOH	SELENOP	SELENOW	DIO2	SELENOF	SELENOK	SELENOM	SELENOS	SELENOT	FASN	SCD	DGAT1	DGAT2	G6PD	SREBP1	ACAA1	ACAA2	ACADL	ACOX1	ATGL1	CPT1a	CPT1b	ECH1	HSL
GPX1	Pearson Correlation	1	.785**	.676**	.644**	.869**	.628**	.565**	.860**	.696**	.568**	.836**	.379*	.711**	0.089	0.075	0.113	.699**	-.595**	-.526**	-.416*	-.588**	-.404*	-.602**	-0.298	-.597**	-.424*
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.039	0.000	0.640	0.694	0.554	0.000	0.001	0.003	0.022	0.001	0.027	0.000	0.110	0.000	0.020
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
GPX4	Pearson Correlation	.785**	1	.598**	.626**	.834**	.558**	.605**	.859**	.762**	.695**	.891**	0.287	.580**	0.230	0.030	0.042	.585**	-.518**	-.478**	-0.303	-.556**	-0.300	-.540**	-0.160	-.544**	-.377*
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.124	0.001	0.221	0.873	0.826	0.001	0.003	0.007	0.103	0.001	0.107	0.002	0.398	0.002	0.040
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SELENOH	Pearson Correlation	.676**	.598**	1	.443*	.874**	.680**	.606**	.733**	.714**	.550**	.630**	.422*	.623**	-0.024	0.005	0.212	.660**	-.522**	-.580**	-.448*	-.637**	-.424*	-.651**	-0.291	-.620**	-0.284
	Sig. (2-tailed)	0.000	0.000		0.014	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.020	0.000	0.898	0.979	0.261	0.000	0.003	0.001	0.013	0.000	0.020	0.000	0.118	0.000	0.128
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SELENOP	Pearson Correlation	.644**	.626**	.443*	1	.675**	.710**	0.242	.691**	.467**	.695**	.769**	0.290	.650**	-0.005	0.020	-0.124	.577**	-.370*	-.465**	-0.190	-.496**	-.441*	-.508**	-0.271	-.543**	-.493**
	Sig. (2-tailed)	0.000	0.000	0.014		0.000	0.000	0.198	0.000	0.009	0.000	0.000	0.120	0.000	0.981	0.915	0.515	0.001	0.044	0.010	0.313	0.005	0.015	0.004	0.147	0.002	0.006
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SELENOW	Pearson Correlation	.869**	.834**	.874**	.675**	1	.782**	.649**	.889**	.838**	.658**	.881**	.459*	.785**	0.058	0.007	0.177	.780**	-.628**	-.635**	-.491**	-.737**	-.452*	-.757**	-0.319	-.743**	-.406*
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.763	0.970	0.349	0.000	0.000	0.000	0.006	0.000	0.012	0.000	0.086	0.000	0.026
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
DIO2	Pearson Correlation	.628**	.558**	.680**	.710**	.782**	1	.457*	.700**	.608**	.417*	.705**	0.333	.790**	0.010	0.008	0.036	.761**	-.489**	-.583**	-0.359	-.695**	-.505**	-.729**	-.373*	-.732**	-.481**
	Sig. (2-tailed)	0.000	0.001	0.000	0.000	0.000		0.011	0.000	0.000	0.022	0.000	0.072	0.000	0.957	0.967	0.852	0.000	0.006	0.001	0.051	0.000	0.004	0.000	0.042	0.000	0.007
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SELENOF	Pearson Correlation	.565**	.605**	.606**	0.242	.649**	.457*	1	.443*	.830**	0.279	.610**	.367*	.670**	-0.026	0.159	0.289	.594**	-.581**	-.578**	-.555**	-.645**	-0.251	-.621**	-0.046	-.608**	-0.038
	Sig. (2-tailed)	0.001	0.000	0.000	0.198	0.000	0.011		0.014	0.000	0.135	0.000	0.046	0.000	0.893	0.401	0.122	0.001	0.001	0.001	0.001	0.000	0.181	0.000	0.810	0.000	0.842
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SELENOK	Pearson Correlation	.860**	.859**	.733**	.691**	.889**	.700**	.443*	1	.657**	.731**	.841**	0.323	.601**	0.208	-0.125	0.060	.707**	-.497**	-.490**	-0.278	-.565**	-.429*	-.584**	-0.304	-.576**	-.510**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.014		0.000	0.000	0.000	0.082	0.000	0.270	0.509	0.752	0.000	0.005	0.006	0.137	0.001	0.018	0.001	0.102	0.001	0.004
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SELENOM	Pearson Correlation	.696**	.762**	.714**	.467**	.838**	.608**	.830**	.657**	1	.429*	.727**	.454*	.781**	0.083	-0.013	0.292	.746**	-.614**	-.606**	-.558**	-.710**	-0.307	-.717**	-0.161	-.701**	-0.100
	Sig. (2-tailed)	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000		0.018	0.000	0.012	0.000	0.663	0.948	0.117	0.000	0.000	0.000	0.001	0.000	0.099	0.000	0.394	0.000	0.599
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SELENOS	Pearson Correlation	.568**	.695**	.550**	.695**	.658**	.417*	0.279	.731**	.429*	1	.781**	0.188	.446*	0.081	-0.126	-0.237	.440*	-0.240	-0.299	-0.081	-0.270	-.411*	-0.294	-0.135	-0.296	-.457*
	Sig. (2-tailed)	0.001	0.000	0.002	0.000	0.000	0.022	0.135	0.000	0.018		0.000	0.321	0.014	0.670	0.507	0.208	0.015	0.202	0.109	0.669	0.149	0.024	0.115	0.476	0.112	0.011
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SELENOT	Pearson Correlation	.836**	.891**	.630**	.769**	.881**	.705**	.610**	.841**	.727**	.781**	1	0.279	.738**	0.059	0.040	-0.086	.679**	-.516**	-.533**	-0.358	-.576**	-.396*	-.598**	-0.244	-.608**	-.455*
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.136	0.000	0.756	0.834	0.651	0.000	0.003	0.002	0.052	0.001	0.030	0.000	0.194	0.000	0.011
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
FASN	Pearson Correlation	.379*	0.287	.422*	0.290	.459*	0.333	.367*	0.323	.454*	0.188	0.279	1	.587**	-0.104	0.082	0.258	.605**	-.709**	-.697**	-.728**	-.724**	-.619**	-.680**	-.392*	-.740**	-0.305
	Sig. (2-tailed)	0.039	0.124	0.020	0.120	0.011	0.072	0.046	0.082	0.012	0.321	0.136		0.001	0.585	0.667	0.169	0.000	0.000	0.000	0.000						

