

Table S1 Composition and nutrient level of artifical milk in d 1-15 (air dry basis %)

Ingredient	Content	Calculated Composition	Nutrient content
Whole milk powder	58.00	DE (Mcal/kg)	4.29
Whey protein concentrate	25.00	Crude protein	27.26
Casein	5.70	Calcium	0.87
Coconut oil	10.00	Total phosphorus	0.61
Dicalcium phosphate	0.10	Available phosphorus	0.61
Chloride choline	0.10	Lys	2.06
Vitamin premix ¹	0.10	Met	0.88
Mineral premix ²	0.50	Cys	0.25
Arg (99%)	0.06	Thr	1.46
<i>DL</i> -Met (99%)	0.06	Trp	0.60
<i>L</i> -Lys-HCl (78%)	0.30	Leu	2.69
Thr (98.5%)	0.03	Ile	1.39
Trp (98%)	0.05	Val	1.54
Total	100.00	Arg	0.88

¹The premix provides following per kg diet: VA11024 IU, VD₃ 4500 IU, VE 48 mg, VK₃6 mg, VB₂ 12 mg, VB₆ 6 mg, VB₁₂ 48 µg, folic acid 2.4 mg, nicotinic acid 28 mg, biotin 300 µg, *D*-pantothenic acid 30 mg.

²The premix provides following per kg diet: Fe 100 mg, Cu 6 mg, Mn 4 mg, Zn 100 mg, I 0.14 mg, Se 0.3 mg.

Table S2 Composition and nutrient level of experimental diets in d 16-28 (air dry basis %)

Ingredient	Content	Calculated Composition	Nutrient content
Corn	13.06	DE (MJ/kg)	14.99
Extruded corn	26.51	Crude protein	21.87
Extruded soybean meal	9.00	Crude fiber	2.21
Dehulled soybean meal	2.00	Lys	1.68
Fat powder	1.00	Trp	0.29
Sucrose	2.00	Thr	1.07
Glucose	3.00	Met+Cys	0.99
Lactose	7.00	Calcium	0.90
Whole milk powder	4.50	Total phosphorus	0.70
Whey Powder	12.00	Available phosphorus	0.57
Fish meal	4.00		
Sprayed dried plasma protein	6.50		
Soy protein concentrate	6.50		
<i>L</i> -Lys-HCl (78%)	0.30		
<i>DL</i> -Met (99%)	0.14		
Trp (98%)	0.01		
Thr (98.5%)	0.08		
Chloride choline	0.10		
Dicalcium phosphate	0.90		
Limestone	0.87		
Nacl	0.10		
Vitamin premix ¹	0.05		
Mineral premix ²	0.40		
Total	100.00		

¹The premix provides following per kg diet: VA 5512 IU, VD₃2250 IU, VE 24 mg, VK₃ 3 mg, VB₂ 6 mg, VB₆ 3 mg, VB₁₂ 24 µg, folic acid 1.2 mg, nicotinic acid 14 mg, biotin 150 µg, *D*-pantothenic acid 15 mg.

²The premix provides following per kg diet: Fe 100 mg, Cu 6 mg, Mn 4 mg, Zn 100 mg, I 0.14 mg, Se 0.3 mg.

Table S3 Composition and nutrient level of experimental diets in d 29-56 (air dry basis %)

Ingredient	Content	Calculated Composition	Nutrient content
Corn	27.79	DE (MJ/kg)	3.55
Extruded corn	27.61	Crude protein	19.59
Dehulled soybean meal	10.33	Calcium	0.81
Extruded soybean	4.50	Total phosphorus	0.57
Fish meal	0.50	Available phosphorus	0.37
Whey powder	8.00	Lys	1.36
Soybean protein concentrate	12.00	Met+Cys	0.75
Soybean oil	1.90	Thr	0.79
Sucrose	3.50	Trp	0.23
Limestone	0.91		
Dicalcium phosphate	0.74		
Nacl	0.25		
<i>L</i> -Lys-HCl (78%)	0.38		
<i>DL</i> -Met (99%)	0.17		
Trp (98%)	0.05		
Thr (98.5%)	0.02		
Chloride choline	0.10		
Vitamin premix ¹	0.05		
Mineral premix ²	0.20		
Total	100.00		

¹The premix provides following per kg diet: VA 5512 IU, VD₃2250 IU, VE 24 mg, VK₃ 3 mg, VB₂ 6 mg, VB₆ 3 mg, VB₁₂ 24 µg, folic acid 1.2 mg, nicotinic acid 14 mg, biotin 150 µg, *D*-pantothenic acid 15 mg.

²The premix provides following per kg diet: Fe 100 mg, Cu 6 mg, Mn 4 mg, Zn100 mg, I 0.14 mg, Se 0.3 mg.

Table S4 Primer sequences and annealing temperature

Target gene	Forward primer 5'-3'	Reverse primer 5'-3'	Product length	Accession number
Pigs				
EGF	ATCTCAGGAATGGGAGTCAACC	TCACTGGAGGATGGAATACAGC	165	NM_214020.1
GLP-2	ACTCACAGGGCACGTTTACCA	AGGTCCCTTCAGCATGTCTCT	149	NM_005671883.1
ANG4	ACCACTTGTACGCACTCAGG	ACTCATCGAAGTGGACAGGC	118	NM_001163409.1
IGF-1	CTGAGGAGGCTGGAGATGTACT	CCTGAACTCCCTCTACTTGTGTT C	137	NM_001097417.1
IGF-1R	TTCGCCAGATCCTAGGGGAG	TCCCAGCTTTGATGGTCAGG	120	NM_214172.1
SGLT-1	GCAACAGCAAAGAGGAGCGTA T	GCCACAAAACAGGTCATAGGTC	137	NM_001164021.1
GLUT-2	GACACGTTTTTGGGTGTTCCG	GAGGCTAGCAGATGCCGTAG	149	NM_001097417.1
SLC _{7A1}	TCTTTGCAGGTCGTTTGGGA	GGCTGATCACCTGTTGGAGT	137	NM_001012613.1
DMT1	GCAGGTGGTTGACGTCTGTA	CACGCCCCCTTTGTAGATGT	100	NM_001128440.1
ZnT1	TGCTCTGCATGCTGTTACTGA	TGGAAGGAGTCCGAGAGCAT	97	NM_001139470.1
Occludin	CAGGTGCACCCTCCAGATTG	GGACTTTCAAGAGGCCTGGAT	110	NM_001163647.2
ZO-1	CTGAGGGAATTGGGCAGGAA	TCACCAAAGGACTCAGCAGG	105	XM_013993251.1
MUC1	GTGCCGCTGCCCACAACCTG	AGCCGGGTACCCCAGACCCA	141	XM_001926883.5
MUC2	GGTCATGCTGGAGCTGGACAGT	TGCCTCCTCGGGGTCGTCAC	181	XM_013989745.1
REG3 γ	GGCTTGGAACCAAATGCTGG	TAGCCAGGGTATGAGCTGGT	101	XM_005662419.1
β -actin	TCTGGCACCACACCTTCT	TGATCTGGGTCATCTTCTCAC	114	DQ178122

Table S5 Primes and probes for real time PCR of bacteria

Items	Primer/probe name and sequence(5'-3')	Product length/bp
<i>Escherichia coli</i>	DC-F,CATGCCGCGTGTATGAAGAA DC-R,CGGGTAACGTCAATGAGCAAA DC-P,(FMA)AGGTATTAACCTTACTCCCTTCCTC(BHQ-1)	96
<i>Lactobacillus</i>	RS-F,GAGGCAGCAGTAGGGAATCTTC RS-R,CAACAGTTACTCTGACACCCGTTCTTC RS-P,(FMA)AAGAAGGGTTTCGGCTCGTAAACTCTGTT(BHQ-1)	126
<i>Bifidobacterium</i>	SQ-F,CGCGTCCGGTGTGAAAG SQ-R,CTTCCCGATATCTACACATTCCA SQ-P, (FMA) ATTCCACCGTTACACCGGGAA(BHQ-1)	121
<i>Bacillus</i>	YB-F,GCAACGAGCGCAACCCTTGA YB-R,TCATCCCCACCTTCCTCCGGT YB-P, (FMA)CGGTTTGTCACCGGCAGTCACCT(BHQ-1)	92
Total bacteria	Eub338F,ACTCCTACGGGAGGCAGCAG Eub518R,ATTACCGCGGCTGCTGG	200