***Animal* Journal**

**Dietary alanyl-glutamine improves growth performance of weaned piglets through maintaining intestinal morphology and digestion-absorption function**

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**Supplementary Table S1.** Ingredients and nutrient composition of the basal diets for piglets (as-fed basis)1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Ingredients, % | |  | Nutrient composition4 |  | |
| Corn | | 58.62 | Digestible energy, MJ/kg | 14.29 | |
| Dehulled soybean meal | | 16.00 | Crude protein, % | 20.15 | |
| Extruded soybean | | 9.90 | Calcium, % | 0.83 | |
| Fish meal | | 5.00 | Total phosphorus, % | 0.65 | |
| Whey powder | | 6.00 | Total lysine, % | 1.41 | |
| Soybean oil | | 1.00 | Total threonine, % | 0.89 | |
| *L*-Lysine·HCl, 78 % | | 0.45 | Total methionine and cystine, % | | 0.74 |
| *L-*Threonine, 98.5 % | | 0.20 |  |  | |
| *DL*-Methionine, 99 % | | 0.11 |  |  | |
| Choline chloride | | 0.23 |  |  | |
| Calcium carbonat | | 0.79 |  |  | |
| Dicalcium phosphate | | 0.90 |  |  | |
| NaCl | | 0.20 |  |  | |
| Vitamin premix2 | | 0.10 |  |  | |
| Mineral premix3 | | 0.50 |  |  | |
| Total | 100.00 | |  |  | |

1 Corn was replaced by 0.15%, 0.30%, or 0.45% Ala-Gln in the experimental diets, respectively; Ala-Gln = alanyl-glutamine.

2 Provided the following per kg diet: Fe, 120 mg; Cu, 7 mg; Mn, 25 mg; Zn, 130 mg; I, 0.2 mg; Se, 0.3 mg.

3 Provided the following per kg diet: vitamin A, 4800 IU; vitamin D3, 480 IU; vitamin E, 40 IU; vitamin K3, 1.5 mg; thiamin, 3 mg; riboflavin, 8 mg; pyridoxine, 3.5 mg; vitamin B12, 0.04 mg; pantothenic acid, 25 mg; niacin, 35 mg; biotin, 0.15 mg; folic acid, 1 mg.

4 Calculated nutrient levels.

**Supplementary Table S2.** Primer sequences used for quantitative real-time PCR of the pig (Sus scrofa)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Gene | | Primer sequence (5'–3') | | Product (bp) | | | GeneBank ID. |
| cPLA2 | | Forward: CCCCTATGAGATTGGCTTTCC  Reverse: CGCCCCATGAAGAACTGAGA | | | | 78 | NM\_001204400.1 |
| SGLT1 | Forward: TCAGCCGCGTCCTGTACAC  Reverse: TGCCGCAATATTTCTCACATTC | | | | 69 | | NM\_001164021.1 |
| GLUT2 | | Forward: CCTGCTTGGTCTATCTGCTGTG  Reverse: TTGATGCTTCTTCCCTTTCTTT | | | 194 | | NM\_001097417.1 |
| PEPT1 | | Forward: GATGAAATGTGAGCGTATGGG | | | 109 | | AY180903.1 |
|  | | Reverse: AAAGAGGGAGGATCTGGAAAA | | |  | |  |
| β-actin | | | Forward: TCTGGCACCACACCTTCT | | 114 | | XM\_021086047.1 |
|  | | | Reverse: TGATCTGGGTCATCTTCTCAC | |  | |  |

cPLA2 = cytoplasmic phospholipase A2; SGLT1 = Na+-dependent glucose transporter 1; GLUT2 = glucose transporter 2; PEPT1 = peptide transporter 1.