Supplementary Material

**Supplementary Table S1** **|** Ingredient composition and nutrient levels of basal diets (air-dry basis, %)

|  |  |  |  |
| --- | --- | --- | --- |
| Ingredient | % | Nutrient concentrations1 | % |
| Corn | 28.00 | CP | 20.36 |
| Extruded corn | 28.00 | ME (MJ/kg) | 14.83 |
| Soybean meal | 10.00 | Ca | 0.82 |
| Extruded soybean | 7.00 | Total P | 0.61 |
| Fish meal | 5.00 | Available P | 0.43 |
| Whey powder | 7.00 | Lysine | 1.37 |
| Soybean protein concentrate | 8.00 | Methionine | 0.45 |
| Soybean oil | 2.16 | Methionine + cystine | 0.74 |
| Sucrose | 2.50 | Threonine | 0.81 |
| Limestone | 0.70 | Tryptophan | 0.21 |
| Dicalcium phosphate | 0.45 |  |  |
| Salt | 0.30 |  |  |
| L-lysine HCl | 0.28 |  |  |
| DL-Methionine | 0.12 |  |  |
| L-Threonine | 0.04 |  |  |
| Choline chloride | 0.10 |  |  |
| Vitamin premix2 | 0.05 |  |  |
| Mineral premix3 | 0.30 | 　 | 　 |

1Values are calculated

2The premix provides following per kilogram of diet: Vitamin A, 6000 IU; Vitamin D3, 400 IU; Vitamin E, 10 IU; Vitamin K3, 2 mg; Vitamin B1, 0.8 mg; Vitamin B2, 6.4 mg; Vitamin B6, 2.4 mg; Vitamin B12, 12 µg; folic acid, 0.2 mg; nicotinic acid, 14 mg; D-pantothenic acid, 10 mg

3The premix provides following per kilogram of diet: Fe (as ferrous sulfate), 130 mg; Cu (as copper sulfate), 80 mg; Mn (as manganese sulfate), 60 mg; Zn (zinc sulfate), 120 mg; I (potassium iodide), 0.3 mg; Se (as sodium selenite), 0.35 mg

**Supplementary Table S2** **|** Primers used for real-time quantitative PCR1.

|  |  |  |  |
| --- | --- | --- | --- |
| Gene | Accession NO. | Primer sequences2 (5'-3')  | Size,bp |
| SGLT1 | NM\_001164021.1 | F: GCAACAGCAAAGAGGAGCGTAT | 137 |
| R: GCCACAAAACAGGTCATAGGTC |
| GLUT2 | [NM\_001097417.1](https://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?db=nucleotide&id=47523065)  | F: GACACGTTTTGGGTGTTCCG | 149 |
| R: GAGGCTAGCAGATGCCGTAG |
| ZO-1 | XM-003480423.4 | F: CAGAGACCAAGAGCCGTCC | 105 |
| R: TGCTTCAAGACATGGTTGGC |
| occludin | NM-001163647.2 | F: TCAGGTGCACCCTCCAGATT | 118 |
| R: AGGAGGTGGACTTTCAAGAGG |
| claudin-1 | [NM-001244539.1](https://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?db=nucleotide&id=1191888577)  | F: ATTTCAGGTCTGGCTATCTTAGTTGC | 214 |
| R: AGGGCCTTGGTGTTGGGTAA |
| Bax | XM\_ 013998624.2  | F: GACGCTGGACTTCCTTCGAG | 334 |
| R: GTGGCCCGAGAGAGGTTTATT |
| Bcl-2 | XM\_021099593.1 | F: GCTACTTACTGCCAAAGGGA | 161 |
| R: TTCAGGCGGAGCTGTAAGAG |
| Caspase-3 | NM\_214131.1  | F: GGAATGGCATGTCGATCTGGT | 351 |
| R: ACTGTCCGTCTCAATCCCAC |
| Caspase-9 | XM\_013998997.2 | F: AATGCCGATTTGGCTTACGT | 195 |
| R: CATTTGCTTGGCAGTCAGGTT |
| Nrf2 | XM\_021075133.1  | F: GCCCCTGGAAGCGTTAAAC | 67 |
| R: GGACTGTATCCCCAGAAGGTTGT |
| Keap1 | XM\_021076667.1  | F: ACGACGTGGAGACAGAAACGT | 56 |
| R: GCTTCGCCGATGCTTCA |
| HO-1 |  NM\_001004027.1  | F: AGCTGTTTCTGAGCCTCCAA | 130 |
| R: CAAGACGGAAACACGAGACA |
| GAPDH | NM\_001206359.1 | F: TCGGAGTGAACGGATTTGGC | 147 |
| R: TGCCGTGGGTGGAATCATAC　 |

1 SGLT1, sodium glucose transport protein-1; GLUT2, glucose transporter-2; ZO-1, zonula occludens 1; Bax, B-cell lymphoma-2-associated X protein; Bcl-2, B-cell lymphoma-2; Nrf2, nuclear factor erythroid-derived 2-related factor 2; Keap1, kelch-like epichlorohydrin-associated protein 1; HO-1, heme oxygenase-1; GAPDH, glyceraldehyde-3-phosphate dehydrogenase.

2F, forward, R, reverse.

****