Supplemental Table 1. Ingredients and nutrient composition of 3 experimental diets fed to gilts throughout gestation and lactation

|  |  |  |  |
| --- | --- | --- | --- |
| Items | Day 1 to 90 of gestation | Day 91 of gestation to parturition | Lactation |
| Ingredients |  |  |  |
| Corn | 61.93  | 64.50  | 62.12  |
| Soybean meal | 13.75  | 18.05  | 22.74  |
| Wheat bran | 19.00  | 9.56  | 5.50  |
| Fish meal | 1.50  | 2.00  | 3.00  |
| Soybean oil | - | 2.00  | 2.50  |
| L-lysine·HCl | 0.08  | 0.03  | 0.23  |
| L-Threonine | 0.03  | - | 0.03  |
| L-Tryptophan | - | - | 0.01  |
| CaCO3 | 1.26  | 1.28  | 1.10  |
| CaHPO3 | 1.35  | 1.48  | 1.27  |
| NaHCO3 | - | - | 0.40  |
| Choline, 50% | 0.15  | 0.15  | 0.15  |
| NaCl | 0.40  | 0.40  | 0.40  |
| Vitamin Premix\* | 0.05  | 0.05  | 0.05  |
| Mineral Premix† | 0.50  | 0.50  | 0.50  |
| Total | 100.00  | 100.00  | 100.00  |
| Nutrient level |  |  |  |
| DE（Mcal/kg） | 3.00  | 3.20  | 3.30  |
| CP (%) | 14.50  | 15.47  | 17.52  |
| Ca (%) | 0.90  | 0.96  | 0.90  |
| P (%) | 0.72  | 0.85  | 0.68  |
| AP (%) | 0.45  | 0.48  | 0.45  |
| Total lysine (%) | 0.71  | 0.72  | 1.11  |
| SID-lysine (%) | 0.60  | 0.64  | 1.00  |

AP, available phosphorus; Ca, calcium; CP, crude protein; DE, digestible energy; P, potassium; SID, standardized ileal digestible.

\* Vitamin mixture: supplied the following amounts of vitamins/kg of complete diet: 17,500 IU vitamin A; 5,000 IU vitamin D3; 80 IU vitamin E; 5 mg vitamin K; 5 mg vitamin B1; 12.5 mg vitamin B2; 7.5 mg vitamin B6; 0.05 mg vitamin B12; 50 mg niacin; 25 mg pantothenic acid; 2.5 mg folacin.

† Mineral mixture: supplied the following amounts of minerals/kg of complete diet: 165 mg iron; 16 mg copper; 165 mg zinc; 30 mg manganese; 0.3 mg selenium; 0.3 mg iodine.

Supplemental Table 2. Primers used for the RT-PCR of the target and reference genes

|  |  |  |
| --- | --- | --- |
| Genes | Primer pairs (5' to 3' direction) | Accession number |
| GLUT4 | F: GTATGTTGCGGATGCTATGGG | EU590115.1 |
| R: CTCGAGTTCTGTGCTGGGTTT |
| HK2 | F: GAGACAGACCCTCTTGGCTTTTC | DQ432056  |
| R: GTTCATTTTTTCCCGAGTTTTAA |
| GS | F: AGAGGAGCGCAACTAAAACCC | GQ845034.1 |
| R: ATTCCAAAGGAGAGGCGAGAG |
| PK | F: CCTGGGAGAGAAAGGAAAGAA | XM\_003356683  |
| R: TCACCACGAGCCACCATGATA |
| LDH | F: TAAGGAACACTGGAAAGCGGT | FJ865398  |
| R: TTAATCATGGTGGAAATCGGA |
| CS | F: GTGCCCTTTCAGACCCCTACT | M21197.1 |
| R: CACATCTTTGCCGACTTCCTT |
| PDK | F: AGAGGAGCGCAACTAAAACCC | NM\_001159306 |
| R: ATTCCAAAGGAGAGGCGAGAG |
| IR | F: GTGTTGTGATTGGAAGCATTTAT | AF102858  |
| R: TGGCACTGAGGTACTCGGGG |
| IRS1 | F: TGGAGAGCAGTAGTGGCAAGC | NM\_001244489 |
| R: TTGGCAACGAGTAGTAGGAGAGG |
| PI3K | F: CCTAAACCACCAAAACCCACTA | XM\_003134015  |
| R: TTTCATTCACTTCTTCCCTCGA |
| AKT1 | F: CGTGTGGCAGGATGTGTATGA | HQ687753.1 |
| R: TAGGAGAACTGGGGGAAGTGA |
| AKT2 | F: AGACCCTGCCCCCCTTAA | HQ687754  |
| R: CCGCATCCACTCCTCCCT |
| DNMT1 | F: TTTCGTCTCCTTCAAGCGCT | DQ060156.1 |
| R: CCATACTGACCAGCCTGCAA |
| DNMT3a | F: AGTGCGTGGATCTCTTGGTG | DQ785811.1 |
| R:TCCTGGTCGTGGTTATTGGC |
| DNMT3b | F: TGAAGAGTCCATCGCTGTTG | NM\_001162404.1 |
| R: CAATCACCAGGTCAAAGGG |
| BHMT | F: GAATGTCATGCAGACCTTCACC | NM\_001200042.1 |
| R: CTTCCGTTTCGCTCTTGC |
| MAT2b | F: GGTTCTGATCACTGGTGCCA | NM\_001142832 |
| R: TGTACGATGACATGGGGCTG |
| AHCYL1 | F: GCGCAAACCAACTCCAAGG | NM\_001201381.1 |
| R: CCTGAGCACGTTTCCTGAGT |
| β-ACTIN | F: CCAGCACGATGAAGATCAAGA | AY550069.1 |
| R: AATGCAACTAACAGTCCGCCTA |

Supplemental Table 3. Sequences of MassARRAY primers and positions relative to the translational start codon for the assays used to analyze DNA methylation of GLUT4 (4 amplicons)

|  |  |  |  |
| --- | --- | --- | --- |
| Amplicon | Primer | Sequence (5`→3`) | Position |
| Amplicon 1 | GLUT4-1-L | aggaagagagATTGGGGGTTTGTGGTTTTAGT | -41 to -177 |
| GLUT4-1-R | cagtaatacgactcactatagggagaaggctTCCCTAAAAACTAACCTCTTCACCT |
| Amplicon 2 | GLUT4-2-L | aggaagagagTTTTAGGGAGGTGAAGAGGTTAGTT | -168 to -658 |
| GLUT4-2-R | cagtaatacgactcactatagggagaaggctAAAAAACACCCAATCCAAACAC |
| Amplicon 3 | GLUT4-3-L | aggaagagagGTGTTTGGATTGGGTGTTTTTTTT | -649 to -798 |
| GLUT4-3-R | cagtaatacgactcactatagggagaaggctCATTCTTAACAACTCAAAACCTCAAA |
| Amplicon 4 | GLUT4-4-L | aggaagagagTTTGAGGTTTTGAGTTGTTAAGAATG | -773 to -997 |
| GLUT4-4-R | cagtaatacgactcactatagggagaaggctCTCCCTCCAAATAACACTACAACAC |

Supplemental Table 4. Serum glucose (mmol/L) levels during intravenous glucose tolerance test

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Time | CON group |  | UN group |  | *P*-value |
| Mean | SEM | Mean | SEM | Diet | Time | Diet × Time |
| -6 min | 3.32E | 0.27 |  | 3.77E | 0.35 |  | < 0.01 | < 0.01 | 0.40 |
| -4 min | 5.95D | 0.38 |  | 7.10C | 0.75 |
| -2 min | 8.73B | 0.62 |  | 9.33B | 0.61 |
| 0 min | 12.57A | 0.57 |  | 13.82A | 0.51 |
| 5 min | 7.45b, C | 0.50 |  | 9.30a, B | 0.63 |
| 10 min | 6.15D | 0.56 |  | 7.32C | 0.61 |
| 15 min | 5.13D | 0.76 |  | 6.67C | 0.61 |
| 20 min | 3.75b | 0.23 |  | 5.47a, CD | 0.43 |
| 30 min | 3.02E | 0.29 |  | 3.60E | 0.24 |
| 45 min | 2.98E | 0.19 |  | 3.12E | 0.25 |
| 60 min | 3.22E | 0.25 |  | 3.48E | 0.35 |
| 90 min | 3.75E | 0.39 |  | 3.35E | 0.32 |
| 120 min | 3.08E | 0.34 |  | 3.32E | 0.30 |

CON, control; UN, undernutrition.

Values are expressed as mean and standard error, n = 8 pigs per treatment.

A, BWithin diet, different capital superscripts letters mean significant difference between times (*P* < 0.05).

a, bWithin a row, different lower case superscript letters mean significant difference between diet (*P* < 0.05).