|  |  |  |
| --- | --- | --- |
| **Name** | **Unit** | **End product** |
| Dry matter | g/kg | 965.00 |
| Moisture | g/kg | 35.00 |
| Crude protein | g/kg | 200.00 |
| Crude fat | g/kg | 200.00 |
| Crude ash | g/kg | 58.00 |
| Lactose | g/kg | 325.00 |
| Crude fiber | g/kg | 0.10 |
| Lysine | g/kg | 17.00 |
| Methionine | g/kg | 5.50 |
| Methionine + cysteine | g/kg | 9.70 |
| Threonine | g/kg | 10.00 |
| Tryptophan | g/kg | 2.60 |
| Calcium | g/kg | 3.50 |
| Phosphorus | g/kg | 4.80 |
| Sodium | g/kg | 3.80 |
| Chlorine | g/kg | 7.60 |
| Potassium | g/kg | 13.00 |
| Na+K-Cl | meq/kg | 284.00 |
| *Vitamin A* | mg/kg | 12.00 |
| *Vitamin D3* | mg/kg | 0.125 |
| *Vitamin E* (all-rac-alpha-tocopherylacetate) | mg/kg | 300.00 |
| Potassiumiodide, iodine | mg/kg | 1.00 |
| Sodiumselenite, selenium | mg/kg | 0.30 |
| Copper(II)sulfate, pentahydrate, Copper | mg/kg | 140.00 |
| Manganese(II)sulfate, monohydrate, Manganese | mg/kg | 45.00 |
| Zincsulfate, monohydrate, Zinc | mg/kg | 84.00 |
| Iron(II)sulfate, monohydrate, Iron | mg/kg | 80.00 |
| Butylatedhydroxyanisole (BHA) | mg/kg | 3.00 |
| Propylgallate | mg/kg | 1.00 |
| Bacillus licheniformis + Bacillus subtilis (ratio : 1/1) | CFU/kg | 2000000000.0 |
| Net energy (NE) | kcal | 3465.00 |

Colony form unit (CFU), Milliequivalents (meq).

**Supplementary Table 1. Feed composition**

**Supplementary Table 1.** Feed composition

|  |  |  |  |
| --- | --- | --- | --- |
| **Target organism** | **Names of primers and probes** | **Sequence of primers and probes (5’-3’)** | **References** |
| **Total bacteria**  | prF19totbac | TCCTACGGGAGGCAGCAGT | (75) |
| prR26totbac | GGACTACCAGGGTATCTAATCCTGTT |
| ***Bifidobacteria***  | prF21bifido | CCTTACCTGGGCTTGACATGT | (23) |
| prR21bifido | GACGTAAGGGGCATGATGATC |
| probe A | 6-fam-TCGCCCCGTGTTGC-mgb |
| probe B | 6-fam-TCGCCGCATGTTGC-mgb |
| ***Lactobacilli*** | prF22lactobacil | AGTGGAACTCCATGTGTAGCGG | (24) |
| prR26lactobacil | GGTATCTAATCCTGTTCGCTACCCAT |
| P25lactobacil | 6-fam-CGTAGATATATGGAAGAACACCAGT-mgb |
| ***Escherichia coli*** | prF23Ecoli  | CCTTACCTGGTCTTGACATCCAC | (21) |
| prR26Ecoli | AGTTTATCACTGGCAGTCTCCTTTGA |
| P20Ecoli | 6-fam-TTATCCTTTGTTGCCAGCGG-mgb |
| ***Clostridia*\*** | prFclosB | GGCGGACGGGTGAGTAACA | (21) |
| prRclosK | CGTTGCTGCATCAGGGTTT |
| PclosF | 6-fam-CGAAAGGAAGATTAATACCG-mgb |
| ***Bacteroides*** | prF20bacteriode  | GAGGAACCTTACCCGGGHTT | (21) |
| prR17bacteriode | GGACGTAAGGGCCGTGC |
| P19bacteriode | 6-fam-CTTAAGTGCCATAACGAGC-mgb |

**Supplementary Table 2. Group and species-specific 16S rRNA gene-targeted primers and probes**

**\***Clostridia includes (C. perfringens, C. paraputrificum, C. Tertium, C. Butyricum).

**Supplementary Table 3. Primer sequences of genes used for qRT-PCR analysis**

|  |  |  |
| --- | --- | --- |
|  | **Primer sequence (5’-3’)** |  |
| **Target gene** | **Forward** | **Reverse** | **AT** | **References** |
| **CLDN1** | TGGCTCCGCGTCTCAGTCC | TGCGAGGGGTGCAGGTCTAA | 65 | NM\_001244539.1 |
| **CLDN2** | CTCGTTGGCCTGTATCATCACC | CAGGGGGGAGTAGAAGTCCC | 63.1 | NM\_001161638.1 |
| **CLDN3** | AACACCATCATCCGGGACTTC | CGCGGAGTAGAGGATCTTGG | 61.2 | NM\_001160075.1 |
| **CLDN4** | AGGAGAGACGCTTCAATCGG | GTCCAGACACCTGAACACCG | 63.1 | NM\_001161637.1 |
| **HPRT** | CTGAACGGCTTGCTCGAGAT | TCCAGCAGGTCAGCAAAGAA | 63.1 | NM\_001032376.2 |
| **OCLN** | ATCAACAAAGGCAACTCT | GCAGCAGCCATGTACTCT | 55.8 | NM\_001163647.2 |
| **pBD-1** | TTCCTCCTCATGGTCCTGTT | AGGTGCCGATCTGTTTCATC | 58.7 | NM\_213838.1 |
| **pBD-2** | TGTCTGCCTCCTCTCTTCC | AACAGGTCCCTTCAATCCTG | 58.7 | NM\_214442.2 |
| **pBD-3** | CCTTCTCTTTGCCTTGCTCTT | GCCACTCACAGAACAGCTACC | 57 | NM\_214444.1 |
| **pEP2C** | CCCTGGACAAGAAACAAACAA | TGACATCTGCCTTCACTTCTC | 55 | BK005522.1 |
| **PG1-5** | GTAGGTTCTGCGTCTGTGTCG | CAAATCCTTCACCGTCTACCA | 65 | XM\_005669497.1 |
| **ZO-1** | GAGTTTGATAGTGGCGTT | GTGGGAGGATGCTGTTGT | 58.7 | XM\_005659811.1 |
| **ZO-2** | GCAGAGACAACCCCCACTTT | CGTTAACCATGACCACCCGA | 55.8 | NM\_001206404.1 |

Claudin (CLDN), Hypoxanthine phosphoribosyltransferase (HPRT), occludin (OCLN), porcine β-defensin (pBD), porcine epididymis protein 2 splicing variant C (pEP2C), protegrins 1-5 (PG1-5), zona occludens protein (ZO).