***Supplementary Table S1*** *Primers used for gene expression analysis by Real-Time PCR*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Gene | Primer Sequence (F and R1; 5’ → 3’) | Product length (bp) | Product Tm2(°C) | Accession number | Reference |
| **ZO-13** | F: GAGTTTGATAGTGGCGTTR: GTGGGAGGATGCTGTTGT | 298 | 87.5 | XM\_003353439.2 | Zhang and Guo, 2009  |
| **Occludin** | F: ATCAACAAAGGCAACTCTR: GCAGCAGCCATGTACTCT | 157 | 83 | NM\_001163647.2 | Zhang and Guo, 2009 |
| **IL-6**4 | F: AGCAAGGAGGTACTGGCAGAAAACAACR: GTGGTGATTCTCATCAAGCAGGTCTCC | 110 | 83.5 | NM\_214399.1 | Zannoni *et al.*, 2012 |
| **IL-10**5 | F: CGGCGCTGTCATCAATTTCTGR: CCCCTCTCTTGGAGCTTGCTA | 89 | 85 | NM\_214041.1 | Duvigneau *et al.*, 2005 |
| **TNF-α**6 | F: GCCCACGTTGTAGCCAATGTCAAAR: GTTGTCTTTCAGCTTCACGCCGTT | 99 | 87 | NM\_214022.1 | Present study |
| **IFN-γ**7 | F: GGCCATTCAAAGGAGCATGGATGTR: TGAGTTCACTGATGGCTTTGCGCT | 149 | 83.5 | NM\_213948.1 | Present study |
| **RPL35**8 | F: AACCAGACCCAGAAAGAGAACR: TTCCGCTGCTGCTTCTTG | 146 | 87.5 | NM\_214326.2 | Alexander *et al.*, 2012 |
| **RPL4**9 | F: CAAGAGTAACTACAACCTTCR: GAACTCTACGATGAATCTTC | 122 | 84 | XM\_003121741.3 | Alexander *et al.*, 2012 |

1 F = forward primer, R = reverse primer

2 Tm = melting temperature

3 ZO-1 = zonula occludens-1

4 IL-6 = interleukin-6

5 IL-10 = interleukin-10

6 TNF-α = tumor necrosis factor-α

7 IFN-γ = interferon-γ

8 RPL35 = ribosomal protein L35

9 RPL4 = ribosomal protein L4.

Alexander LS, Seabolt BS, Rhoads RP and Stahl CH 2012. Neonatal phosphate nutrition alters in vivo and in vitro satellite cell activity in pigs. Nutrients 4, 436-448.

Duvigneau JC, Hartl RT, Groiss S and Gemeiner M 2005. Quantitative simultaneous multiplex real-time PCR for the detection of porcine cytokines. Journal of Immunological Methods 306, 16-27.

Zannoni A, Giunti M, Bernardini C, Gentilini F, Zaniboni A, Bacci ML and Forni M 2012. Procalcitonin gene expression after LPS stimulation in the porcine animal model. Research in Veterinary Science 93, 921-927.

Zhang B and Guo Y 2009. Supplemental zinc reduced intestinal permeability by enhancing occludin and zonula occludens protein-1 (ZO-1) expression in weaning piglets. British Journal of Nutrition 102, 687-693.