

Supplementary Table S1. Ovine phosphatonin and vitamin D-related kidney genes - transient receptor potential cation channel subfamily V member 5 (TRPV5), transient receptor potential cation channel subfamily V member 6 (TRPV6), Calbindin D_{9k} (calD_{9k}), Calbindin D_{28k} (calD_{28k}), plasma membrane calcium ATPase (PMCA), sodium calcium exchanger 1 (NCX1), cytochrome P450 family 27 subfamily B polypeptide 1 (CYP27B1), cytochrome P450 family 24 subfamily A polypeptide 1 (CYP24A1), vitamin D receptor (VDR), fibroblast growth factor receptor 1 IIIc (FGFR1IIIc), α -klotho (klotho), sodium-phosphate co-transporter 1 (NPT1), NPT2a, NPT2c, parathyroid hormone 1 receptor (PTH1R), succinate dehydrogenase complex (SDH) and phosphoglycerate kinase 1 (PGK1). Primer sequences from Azarpeykan et al. 2016 and Dittmer et al. 2020^{1,2}

Gene	Full gene name	Primer (5'-3')	Amplicon length (bp)	Primer concentration nM F:R	PCR Efficiency %	Regression coefficient (R ²)
TRPV5	Transient receptor potential cation channel subfamily V member 5	F: CGGGTCAGCAATCATCCTAT R: ATTGTGATGACGTGGAATGG	108	250:250	110.6	0.96
TRPV6	Transient receptor potential cation channel subfamily V member 6	F: TGATGCTGGAGAAGAAGCTG R: TGGTTGATGTCCTGTTTCTCTT	118	250:250	93.9	0.98
calD_{9k}	Calbindin D9k	F: TCACTGCTGAACGCCAGGACA R: AGCTCCTCCTGGACAGTTGGT	122	250:250	99.3	0.99
calD_{28k}	Calbindin D28k	F: GCTGGAAAAAGCAAACAAGACTGTTGA R: TTCTCCTGCACGGGTAGTAATCTGG	139	400:400	90.8	0.98
PMCA	Plasma membrane calcium ATPase	F: TGCAGCCATAGTATCATTGGGCCT R: TTGCCGCTCCTTCAATCCAACCA	128	250:250	94.9	0.99
NCX1	Sodium calcium exchanger 1	F: TGGCGAACATCAACCCGTGCT R: TGCAGATTGTAGCGTCGCATCTCG	93	300:300	98.4	0.99
CYP27B1	Cytochrome P450 family 27 subfamily B polypeptide 1	F: GCAGAGCTTGAGTTGCACAT R: CTTCTCTCAGGCACCAGGAC	119	250:250	102.2	0.92
CYP24A1	Cytochrome P450 family 24 subfamily A polypeptide 1	F: CTGTGATGAGAGAGGCCGATTGA R: AGCTTCCTCCCCTGCCTTCTT	128	600:600	103.9	0.99
VDR	Vitamin D receptor	F: TCATGCTGCGCTCCAACCACT R: TGGAACCTTGATGAGGGGCTCGAT	140	400:400	93.5	0.98
FGFR1IIIc	Fibroblast growth factor receptor 1 IIIc	F: ACACCACCGACAAAGAGATGG R: TCAGCCATGCAGAGTGATGG	120	900:900	99.3	0.99

Klotho	Alpha-klotho	F: TGTGGAGAATGGCTGGTTTGT R: TACCCAATGACATCCACCCC	129	300:300	96.0	1.00
NPT1 (SLC17A1)	Sodium-phosphate co-transporter 1	F: TCCCACTGGCAGCTGAATTT R: CTCAGAGCAGTAAGTCGGCC	148	300:300	98.1	1.00
NPT2a (SLC34A1)	Sodium-phosphate co-transporter 2a	F: CACCATGACCCACTGCCTG R: TCCAGGGAGCAGACGAAGAG	149	300:300	98.8	0.99
NPT2c (SLC34A3)	Sodium-phosphate co-transporter 2c	F: CGACATCCTCAAGGTGCTGA R: AATAAGGCTCCGTTGGTGG	109	300:300	100	0.99
PTH1R	Parathyroid hormone 1 receptor	F: CAGTACCGGAAGCTGCTCAA R: TTGCCAGAGAGTCCCTGAGA	111	900:900	98.6	1.00
SDHA	Succinate dehydrogenase complex	F: ACCTGATGCTTTGTGCTCTGC R: CCTGGATGGGCTTGAGTAA	126	300:300	97.1	0.99
PGK1	Phosphoglycerate kinase 1	F: ACTCCTTGACAGCCAGTTGCT R: AGCACAAGCCTTCTCCACTTCT	101	300:300	94.5	0.99

1. Azarpeykan S, Dittmer KEKE, Marshall JCJC, et al. Evaluation and Comparison of Vitamin D Responsive Gene Expression in Ovine, Canine and Equine Kidney. *PLoS One*. 2016;11:e0162598.
2. Dittmer KE, Heathcott RW, Marshall JC, Azarpeykan S. Expression of phosphatonin-related genes in sheep, dog and horse kidneys using quantitative reverse transcriptase pcr. 2020;10:1806.