

Supplementary information.

Table S1. Nucleotide sequence of primers used for qPCR of mucus- and ER stress-related genes in goblet cells.^{44, 45, 79}

Protein	Gene	Forward (5'-3')	Reverse (5'-3')
beta-2-microglobulin	<i>B2M</i>	GGTTTCATCCATCCGACATT	ACGGCAGGCATACTCATCTT
Mucin-2	<i>MUC2</i>	5'-AACACAGTCCTGGTGGAAAGG	5'-CATTGTCAGGTCCCACACAG
Trefoil factor-3	<i>TFF3</i>	5'-CATGTCACCCCAAGGAGTG	5'-AGGTGCATTCTGCTTCCTGC
Resistin-like β	<i>RETNLB</i>	5'- CACCCAGGAGCTCAGAGATCTAA	5'-ACGGCCCCATCCTGTACA
Galactose-3-O-sulfotransferase-2	<i>GAL3ST2</i>	5'-TGGGCGGCTTG CAGAGATA	5'-GCTCTAAGTCCGAGTGCAGGA
Carbohydrate (N-acetylglucosamine-6-O) sulfotransferase-5	<i>CHST5</i>	5'-CCCAGTGAGGAACTGGTCTTC	5'-ATCTGTGTTCCAGGAAAGCC
Heat shock protein family A (Hsp70) member 5 (BiP)	<i>HSPA5</i>	5'-CCACCAAGATGCTGACATTG	5'-AGGGCCTGCACTTCCATAGA
X-box binding protein-1	<i>XBP1</i>	5'- GGAGTTAAGACAGCGCTTGGGGA	5'- TGTCTGGAGGGGTGACA ACTGGG

Table S2. Cycling protocol for qPCR of mucus- and ER stress-related genes in goblet cells.

Step	Time and temperature	Temperature	
Polymerase activation	10 min	95 °C	
Denaturalization	15 sec	95 °C	
Primer annealing	30 sec	55 °C	40 cycles
Extension	30 sec	72 °C	