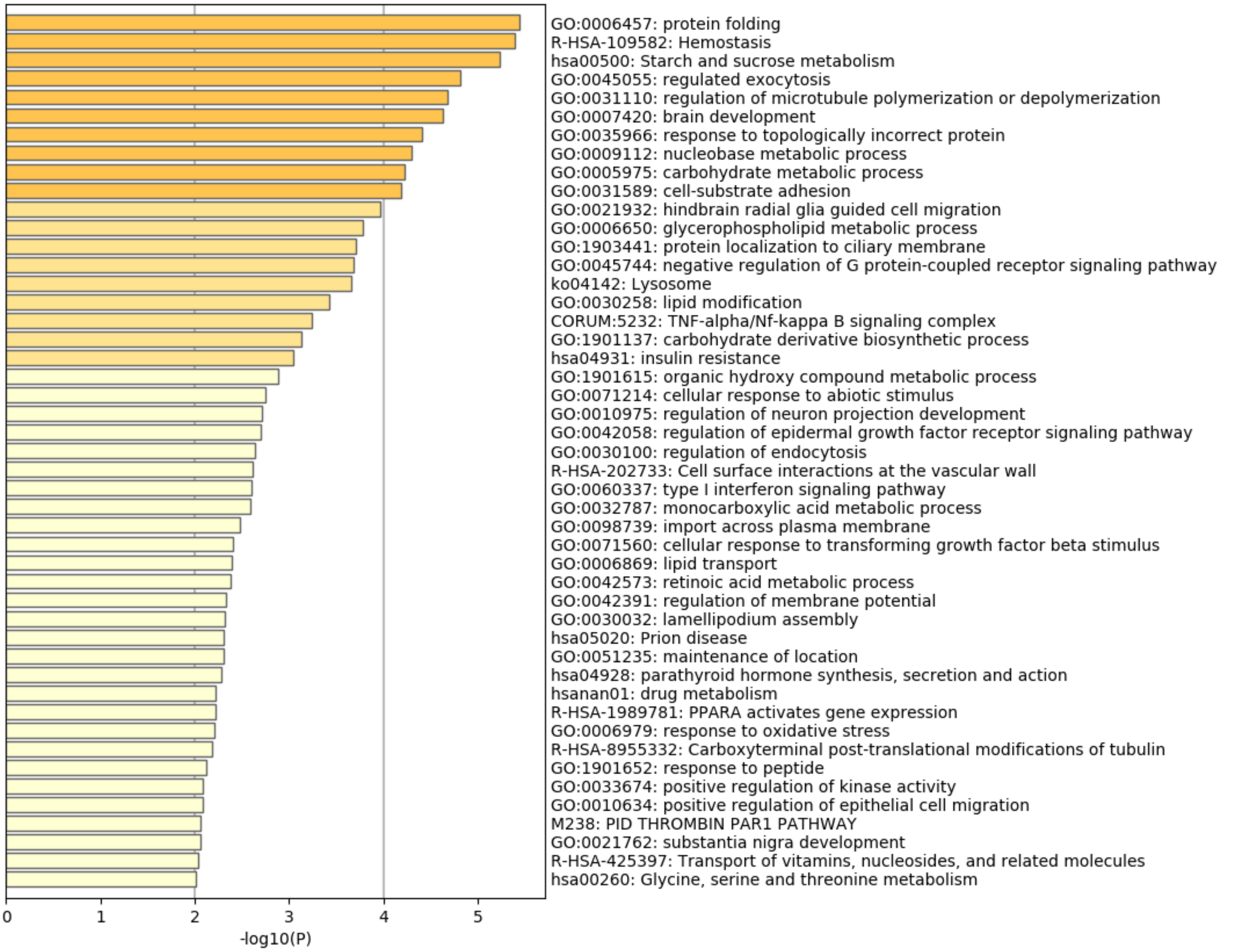

Fig. S1 Enriched biological pathways due to propionate in Caco-2 cells.

Caco-2 cells were incubated with and without 20 mM propionate for 24 h. Total RNA was extracted from Caco-2 cells and DNA microarray analysis of all expressed RNA performed. The 300 genes upregulated by propionate were subjected to gene ontology analysis by Metascape in order to identify the enriched ontology clusters.

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-800 CTTTCCCCAA GTGCTCCTCC TACCCGGATC AGCCAACGCC CACATACCTC AGGCTTAAAC
-740 CAACTAGGGA ACTTTCCAGT ACTTTCCCAA ACAAGGACCT ACTGAGCCTT TCAGGTTCAC
-680 AATCAATCAG ATCCCTACTG GCTCACCTAG TCTCCCGACG CCTTCGCTTC AGTTTGGAAA
-620 CGTCCAGATT ACGCAGCCCC AGCGAGTAGG TGGGGGCTCC CTCAATATCA AACTGCACAA
-560 CCGGGGTCCC CCCACCCCCC ACCCCGTCCC TCCCTGCAAA TTTGAGACGG CTCCAACTCA
-500 GTAATCTTTT TCCAAACTGG CCCATGAGGT CAGAGACAGT ATCTCCATTG TAACGTGGCC
-440 GGGCGGTGTC AACACAAACG CCCCCACCCT CCCCTGGACG CGCGTAACCC GCTCCCCGCA
-380 CCAGCCCCCT GCCCACAACT GCGCAGGCCC AGCAAGCCCC CACAATTAAA AGCCCAGCGC
-320 CGACCCTTCC TGTCAATTAG GCGCTGAAGC GCAGGCGGTC AGCATCGCCA TGGAGACCAA
-260 CACCCTTCCC ACCGCCACTC CCCCTTCCTC TCAGGGTCCC TGTCCCCTCC AGTGAATCCC
-200 AGAAGACTCT GGAGAGTTCT GAGCAGGGGG CGGCACTCTG GCCTCTGATT GGTCCAAGGA
-140 AGGCTGGGGG GCAGGACGGG AGGCGAAAAC CCTGGAATAT TCCCGACCTG GCAGCCTCAT
 -80 CGAGCTCGGT GATTGGCTCA GAAGGGAAAA GGCGGGTCTC CGTGACGACT TATAAAAGCC
 -20 CAGGGGCAAG CGGTCCGGAT AACGGCTAGC CTGAGGAGCT GCTGCGACAG TCCACTACCT
  41 TTTTCGAGAG TGACTCCCGT TGTCCCAAGG CTTCCCAGAG CGAACCTGTG CGGCTGCAGG
 101 CACCGGCGCG TCGAGTTTCC GGCGTCCGGA AGGACCGAGC TCTTCTCGCG GATCCAGTGT
 161 TCCGTTTCCA GCCCCCAATC TCAGAGCGGA GCCGACAGAG AGCAGGGAAC CGGC
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Fig. S2 Nucleotide sequence of human Hspa1 promoter cloned in pGL3 plasmid.

Numbers indicate the nucleotide positions -800 to +214, relative to the major transcriptional start site, which is underlined.

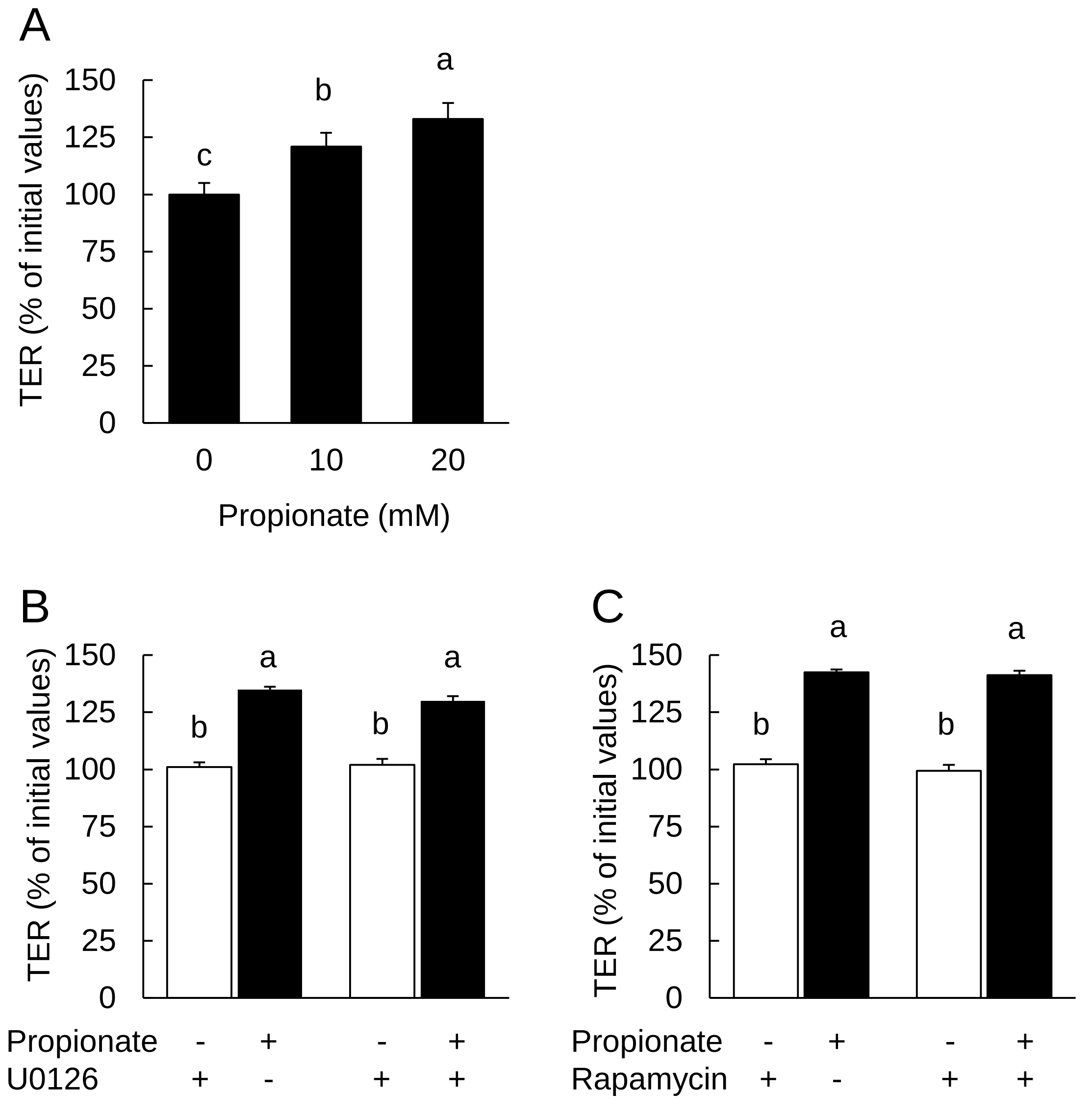

Fig. S3 Effect of propionate on regulation of the tight junction barrier in Caco-2 cells.

(A) Caco-2 cells were incubated with and without propionate (10 and 20 mM) for 24 h. (B, C) MEK (10 μM U0126, B) and mTOR (0.5 μM rapamycin, C) inhibitors were added to cell cultures 1 h before propionate administration, and cells were incubated with and without propionate (10 mM) for 24 h. The tight junction barrier was evaluated by measuring transepithelial electrical resistance (TER). Data are presented as the mean ± SEM, n = 6. Means without a common letter are significantly different ($p < 0.05$).

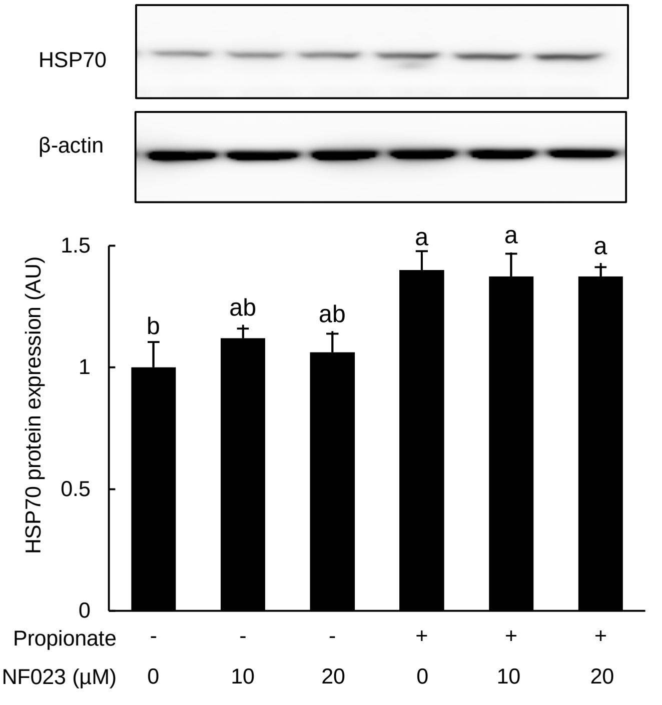

Fig. S4 Effects of pharmacological inhibition of GPR41 on the propionate-mediated upregulation of HSP70 in Caco-2 cells.

A selective antagonist for G$\alpha_{i/o}$ protein, NF023 (10 and 20 μM), was added to cell cultures 1 h before propionate administration, and cells were incubated with and without propionate (10 mM) for 24 h. HSP70 protein levels in the cells were determined by immunoblot analysis. Representative immunoblot images of six samples are shown. Data are presented as the mean ± SEM, n = 6. Means without a common letter are significantly different ($p < 0.05$).

Supplemental Table S1. Primers Used in qRT-PCR.

Target gene	Forward (5′ to 3′)	Reverse (5′ to 3′)
Human *Gapdh*	CAACGGATTTGGTCGTATTGGG	AAGGGGTCATTGATGGCAAC
Human *Hspa1a*	CGCAGAACACCGTGTTTGAC	AAAGGCCAGTGCTTCATGTC

Supplemental Table S2. Primers Used for Constructing the *Hspa1a* Promoter Plasmids.

Forward (5′ to 3′)	Reverse (5′ to 3′)
CGCACGCGTCTTTCCCCAAGTGCTC CTCCTACCCGG	CCGAGATCTGCCGGTTCCCTGCTCTC TGTCGGCTCC