

Table S1. List of the peptide identified by means of LC-MS/MS from donkey milk fermented with *L. rhamnosus* 17D10 (LrP), *L. lactis* subsp. *cremoris* 40FEL3 (LcP) and not inoculated donkey milk (CtIP). Only the peptides shared by the three biological replicates are listed in the table for each condition.

SAMPLE	PEPTIDE SEQUENCE	PROTEIN ACCESSION	DESCRIPTION
CtIP	ALQPLPGRVQIIPDLTR	XP_014693525.1	beta-lactoglobulin-1
CtIP	AVVPQNILPLAQPPIVP	XP_014708641.1	beta-casein
CtIP	DKNGVTP	XP_014714975.1	E3 ubiquitin-protein ligase HACE1
CtIP	DPATQPIVPVHNPVIV	XP_014708641.1	beta-casein
CtIP	FALEYINELNR	XP_014708642.1	alpha-S1-casein
CtIP	FDPATQPIVPVHNPVIV	XP_014708641.1	beta-casein
CtIP	FIAIPPKK	XP_014702750.1	kappa-casein
CtIP	FIITLRNF	CAX65660.2	alpha-S2-casein
CtIP	FLALHVLTT	XP_014683056.1	epithelial chloride channel protein-like
CtIP	FLKSPIVPFSESRQ	XP_014708641.1	beta-casein
CtIP	FLKSPIVPFSESRQI	XP_014708641.1	beta-casein
CtIP	FLKSPIVPFSESRQILNPTNGENLRPL	XP_014708641.1	beta-casein
CtIP	FLKSPIVPFSESRQILNPTNGENLRPLVH	XP_014708641.1	beta-casein
CtIP	FLLTLSTQT	XP_014693013.1	tumor necrosis factor receptor superfamily member 21
CtIP	FLLYQDPQ	XP_014708641.1	beta-casein
CtIP	FLLYQDPQLG	XP_014708641.1	beta-casein
CtIP	FLLYQDPQLGL	XP_014708641.1	beta-casein
CtIP	FLLYQDPQLGLTGEFD	XP_014708641.1	beta-casein
CtIP	FLLYQDPQLGLTGEFDPATQPIVP	XP_014708641.1	beta-casein
CtIP	FLLYQDPQLGLTGEFDPATQPIVPVHNP	XP_014708641.1	beta-casein
CtIP	FLLYQDPQLGLTGEFDPATQPIVPVHNPVIV	XP_014708641.1	beta-casein
CtIP	FLQPEIMEVSQAK	XP_014708641.1	beta-casein
CtIP	FLQPEIMEVSQAKETILPK	sp P86273.1 CASB_EQUAS	Beta-casein
CtIP	FLQPEIMEVSQAKETILPKRKVMP	sp P86273.1 CASB_EQUAS	Beta-casein
CtIP	FLQPEIMEVSQAKETLLPK	XP_014708641.1	beta-casein
CtIP	FLQPEIMEVSQAKETLLPKRK	XP_014708641.1	beta-casein
CtIP	FLQPEIMEVSQAKETLLPKRKVMP	XP_014708641.1	beta-casein
CtIP	FMHQVPQSLLQT	XP_014708641.1	beta-casein
CtIP	FMHQVPQSLLQTL	XP_014708641.1	beta-casein
CtIP	FMHQVPQSLLQTLMLPSQP	XP_014708641.1	beta-casein
CtIP	FSESRQILNPTNGENLRPLVH	XP_014708641.1	beta-casein
CtIP	FYLEPFQP	XP_014708642.1	alpha-S1-casein isoform X1
CtIP	ILNPTNGENLRPLVH	XP_014708641.1	beta-casein
CtIP	ILPLAQPPIVP	XP_014708641.1	beta-casein
CtIP	ILPLAQPPIVPFL	XP_014708641.1	beta-casein
CtIP	ILPLAQPPIVPFLQPEIMEVSQAKET	XP_014708641.1	beta-casein
CtIP	ILPLAQPPIVPFLQPEIMEVSQAKETLLPKRK	XP_014708641.1	beta-casein
CtIP	IVPFSESRQILNPTNGENLRPLVH	XP_014708641.1	beta-casein
CtIP	IYAQEQLLR	XP_014708642.1	alpha-S1-casein isoform X1
CtIP	LAQPPIVPFLQPEIMEVSQAKET	sp P86273.1 CASB_EQUAS	Beta-casein
CtIP	LAQPPIVPFLQPEIMEVSQAKETLLPKRK	XP_014708641.1	beta-casein
CtIP	LGLTGEFDPATQPIVPVHNPVIV	XP_014708641.1	beta-casein
CtIP	LKSPIVPFSESR	XP_014708641.1	beta-casein
CtIP	LLYQDPQLGLTGEFDPATQPIVPVHNP	XP_014708641.1	beta-casein
CtIP	LLYQDPQLGLTGEFDPATQPIVPVHNPVIV	XP_014708641.1	beta-casein

CtlP	LMLPSQPVLSPQSK	XP_014708641.1	beta-casein
CtlP	LNPTNGENLRPL	XP_014708641.1	beta-casein
CtlP	LNPTNGENLRPLVHL	XP_014708641.1	beta-casein
CtlP	LQAIYAQEQLLR	XP_014708642.1	alpha-S1-casein isoform X1
CtlP	LRLPVHL	XP_014708641.1	beta-casein
CtlP	LRLPVHLIQP	XP_014708641.1	beta-casein
CtlP	LTGEFDPATQPIVP	XP_014708641.1	beta-casein
CtlP	LTGEFDPATQPIVPVH	XP_014708641.1	beta-casein
CtlP	LTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	LTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	LTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	LTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	LTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	LVIVPNMLA	XP_014692308.1	olfactory receptor 10V1-like
CtlP	LVKINPKFSPQY	CAX65660.2	alpha s2 casein B
CtlP	LYQDPQLGLTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	LYQDPQLGLTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	NLRLPVHL	XP_014708641.1	beta-casein
CtlP	NPTNGENLRPLVH	XP_014708641.1	beta-casein
CtlP	PATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	PIVPVHN	XP_014708641.1	beta-casein
CtlP	PPIVPFLQPEIMEVSQAKET	XP_014708641.1	beta-casein
CtlP	PQLGLTGEFDPATQPIVP	XP_014708641.1	beta-casein
CtlP	PQNILPLAQPPIVP	XP_014708641.1	beta-casein
CtlP	PYAVVPQNILPLAQPPIVP	XP_014708641.1	beta-casein
CtlP	QILNPTNGENLRPL	XP_014708641.1	beta-casein
CtlP	QILNPTNGENLRPLVHL	XP_014708641.1	beta-casein
CtlP	QLGLTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	QPVVPYPQRDTPVQAF	XP_014708641.1	beta-casein
CtlP	SPIVPFSERQ	XP_014708641.1	beta-casein
CtlP	SPPQSKVAPFPQPVVPYPQRDTPVQA	XP_014708641.1	beta-casein
CtlP	TPVQAFLLYQDPQLGLTGEFDPATQPIVPVHN	XP_014708641.1	beta-casein
CtlP	VAPFPQPVVPYPQR	XP_014708641.1	beta-casein
CtlP	VAPFPQPVVPYPQRDTP	XP_014708641.1	beta-casein
CtlP	VLSPPGA	XP_014701853.1	antigen peptide transporter 2
CtlP	VMPFLKSPIVPFSERQILNPTNGENLRPLVH	XP_014708641.1	beta-casein
CtlP	VPYAVVPQNILPLAQPPIVP	XP_014708641.1	beta-casein
CtlP	VQIPQWQVLPNIYPS	XP_014702750.1	kappa-casein
CtlP	VVPQNILPLAQPPIVP	XP_014708641.1	beta-casein
CtlP	VVPYPQRDTPVQAF	XP_014708641.1	beta-casein
LcP	AAWFHPAQIMQH	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	AAWFHPAQIMQHVAYSFPFHD TAKLIASEN	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	AIYAQEQLIR	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	ARPAAVRPHVQIPQWQVLPNIYPS	1::XP_014702750.1	kappa-casein
LcP	AVLVAAG	1::XP_014724157.1	dynein heavy chain 12, axonemal isoform X1
LcP	AVRPHVQIPQWQVLPN	1::XP_014702750.1	kappa-casein
LcP	AVRPHVQIPQWQVLPNIYPS	1::XP_014702750.1	kappa-casein
LcP	DPATQPIVPVHN	1::CBI63375.1	beta-casein
LcP	DPQLGLTGEFDPATQPIVPVHN	1::CBI63375.1	beta-casein
LcP	DQTKTGASPIPIVN	1::sp B7VGF9.1 CASA2_EQUAS	Alpha-S2-casein; Flags:
LcP	DVHKAVLVAQ	1::XP_014697927.1	osteopontin
LcP	DVHKAVLVAQGLHVA	1::XP_014697927.1	osteopontin
LcP	FDPATQPIVPVHN	1::CBI63375.1	beta-casein
LcP	FDPATQPIVPVHN	1::CBI63375.1	beta-casein

LcP	GENLRLPVHLIQPF	1::CBI63375.1	beta-casein
LcP	HDTAKLIASE	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	HLRALVLINNQHMPYQYYARPA	1::XP_014702750.1	kappa-casein
LcP	HVAYSPFHDTAK	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	ILNPTNGENLRLPVH	1::CBI63375.1	beta-casein
LcP	ISRFVQPQPVVYPY	1::CBI63375.1	beta-casein
LcP	KVAPFPQPVVYPYQ	1::CBI63375.1	beta-casein
LcP	LKMNILGLVLP	1::XP_014707907.1	C-C chemokine receptor type 1
LcP	LMLPSQPVLSPQSK	1::CBI63375.1	beta-casein
LcP	LPSQPVLSPQSK	1::CBI63375.1	beta-casein
LcP	LRLPVHLIQPF	1::CBI63375.1	beta-casein
LcP	LRLPVHLIQPFMH	1::CBI63375.1	beta-casein
LcP	MHQVPQSLLQT	1::CBI63375.1	beta-casein
LcP	MHQVPQSLLQTL	1::CBI63375.1	beta-casein
LcP	MHQVPQSLLQTLML	1::CBI63375.1	beta-casein
LcP	MHQVPQSLLQTLMLPSQPVL	1::CBI63375.1	beta-casein
LcP	MHQVPQSLLQTLMLPSQPVLSPQ	1::CBI63375.1	beta-casein
LcP	MHQVPQSLLQTLMLPSQPVLSPQSK	1::CBI63375.1	beta-casein
LcP	MLPSQPVLSPQSK	1::CBI63375.1	beta-casein
LcP	MPFLKSPIVPF	1::CBI63375.1	beta-casein
LcP	NGENLRLPV	1::CBI63375.1	beta-casein
LcP	NGENLRLPVHLIQPF	1::CBI63375.1	beta-casein
LcP	NILPLAQPIVPF	1::CBI63375.1	beta-casein
LcP	NLRLPVHLIQPF	1::CBI63375.1	beta-casein
LcP	NNQHMPYQYYARPA	1::XP_014702750.1	kappa-casein
LcP	NQLQLQAIYAQ	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	PATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LcP	PIVPVHNPVIV	1::CBI63375.1	beta-casein
LcP	PPQSKVAPFPQPVVYPYQ	1::CBI63375.1	beta-casein
LcP	PQLGLTGEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LcP	PSQPVLSPQSK	1::CBI63375.1	beta-casein
LcP	QDPQLGLTGEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LcP	RDTPVQAFLLY	1::CBI63375.1	beta-casein
LcP	RFVQPQPVVYPY	1::CBI63375.1	beta-casein
LcP	RKVMFPFLKSPIVPF	1::CBI63375.1	beta-casein
LcP	RKVMFPFLKSPIVPFSERQILNPTNGEN	1::CBI63375.1	beta-casein
LcP	RLAVLINNQHMPY	1::XP_014702750.1	kappa-casein
LcP	RLPVHLIQPF	1::CBI63375.1	beta-casein
LcP	RVVNQEAY	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	RVVNQEAYF	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	RVVNQEAYFY	1::sp P86272.1 CASA1_EQUAS	Alpha-S1-casein
LcP	SERQILNPTNGE	1::CBI63375.1	beta-casein
LcP	SERQILNPTNGEN	1::CBI63375.1	beta-casein
LcP	SKVAPFPQPVVYPYQ	1::CBI63375.1	beta-casein
LcP	SKVVVSTLVPLA	1::XP_014684365.1	polymeric immunoglobulin receptor
LcP	SPPQSKVAPFPQPVVYPYQ	1::CBI63375.1	beta-casein
LcP	SRFVQPQPVVYPY	1::CBI63375.1	beta-casein
LcP	TPVQAFLLYQDPQLGLTGEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LcP	VAPFPQPVVYPYQ	1::CBI63375.1	beta-casein
LcP	VHKAVLVAQ	1::XP_014697927.1	osteopontin
LcP	VHKAVLVAQGLHVA	1::XP_014697927.1	osteopontin
LcP	VKINPKFSPQYFQ	1::CAX65660.2	alpha s2 casein

LcP	VKINPKFSPQYFQA	1::CAX65660.2	alpha s2 casein
LcP	VQIPQWQVLPNIYPS	1::XP_014702750.1	kappa-casein
LcP	YARPAAVRPHVQIPQWQVLPNIYPS	1::XP_014702750.1	kappa-casein
LcP	YQDPQLGLTGE	1::CBI63375.1	beta-casein
LcP	YQDPQLGLTGEFDPA	1::CBI63375.1	beta-casein
LcP	YQDPQLGLTGEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	APFPQPVVPYPQRDTP	1::CBI63375.1	beta-casein
LrP	AQPPIVPFLQPEIMEVSQAKETLLPKRKVMPFL	1::CBI63375.1	beta-casein
LrP	AVVPQNILPLAQPPIVP	1::CBI63375.1	beta-casein
LrP	DPATQPIVPVHNP	1::CBI63375.1	beta-casein
LrP	DPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	DPQLGLTGEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	FIAIPPKKLQ	1::CBZ41787.1	kappa-casein
LrP	FLALHVL	1::XP_014683056.1	epithelial chloride channel protein-like
LrP	GEFDPATQPIVPVH	1::CBI63375.1	beta-casein
LrP	GEFDPATQPIVPVHNPVI	1::CBI63375.1	beta-casein
LrP	GEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	ILNPTNGENLRLP	1::CBI63375.1	beta-casein
LrP	ILNPTNGENLRLPVH	1::CBI63375.1	beta-casein
LrP	ILPLAQPPIVP	1::CBI63375.1	beta-casein
LrP	INPKFSPQY	1::CAX65660.2	alpha s2 casein
LrP	IWLKPDPSQK	1::XP_014697927.1	osteopontin
LrP	KVAPFPQPVVPYPQ	1::CBI63375.1	beta-casein
LrP	LKSPIVPFSEKQILNPTNGENLRLPVH	1::CBI63375.1	beta-casein
LrP	LNPTNGENLRLP	1::CBI63375.1	beta-casein
LrP	LNPTNGENLRLPVH	1::CBI63375.1	beta-casein
LrP	LPSQPVLSPPQSK	1::CBI63375.1	beta-casein
LrP	LPSQPVLSPPQSKVAPFP	1::CBI63375.1	beta-casein
LrP	LRLPVHLIQP	1::CBI63375.1	beta-casein
LrP	LRLPVHLIQPF	1::CBI63375.1	beta-casein
LrP	LVKINPKFSPQY	1::CAX65660.2	alpha s2 casein
LrP	LYQDPQLGLTGEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	MHQVPQSLLQTL	1::CBI63375.1	beta-casein
LrP	MHQVPQSLLQTLMLPSQP	1::CBI63375.1	beta-casein
LrP	MHQVPQSLLQTLMLPSQPVLSPPQ	1::CBI63375.1	beta-casein
LrP	MLPSQPVLSPPQSK	1::CBI63375.1	beta-casein
LrP	NILPLAQPPIVP	1::CBI63375.1	beta-casein
LrP	NLRLPVHLIQP	1::CBI63375.1	beta-casein
LrP	NLRLPVHLIQPF	1::CBI63375.1	beta-casein
LrP	NPTNGENLRLPV	1::CBI63375.1	beta-casein
LrP	PATQPIVPVHNPV	1::CBI63375.1	beta-casein
LrP	PATQPIVPVHNPVI	1::CBI63375.1	beta-casein
LrP	PATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	PIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	PPQSKVAPFPQPVVPYPQ	1::CBI63375.1	beta-casein
LrP	PQLGLTGEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	PTNGENLRLPVH	1::CBI63375.1	beta-casein
LrP	PYAEPVPYAVVPQNILP	1::CBI63375.1	beta-casein
LrP	QDPQLGLTGEFDPATQPIVPVHNPVIV	1::CBI63375.1	beta-casein
LrP	QSKVAPFPQPVVPYPQ	1::CBI63375.1	beta-casein
LrP	RDTPVQAFL	1::CBI63375.1	beta-casein
LrP	RDTPVQAFLLY	1::CBI63375.1	beta-casein

LrP	RDTPVQAFLLYQDPQLGLT	1::CBI63375.1	beta-casein
LrP	RFVQPQPVVYP	1::CBI63375.1	beta-casein
LrP	RFVQPQPVVYPY	1::CBI63375.1	beta-casein
LrP	RFVQPQPVVYPYAEP	1::CBI63375.1	beta-casein
LrP	RFVQPQPVVYPYAEPVPY	1::CBI63375.1	beta-casein
LrP	RLPVHLIQP	1::CBI63375.1	beta-casein
LrP	RLPVHLIQPF	1::CBI63375.1	beta-casein
LrP	RQILNPTNGENLRLP	1::CBI63375.1	beta-casein
LrP	SKVAPFPQPVPYPYQ	1::CBI63375.1	beta-casein
LrP	SPIVPFSEQRQILNPTNGENLRLP	1::CBI63375.1	beta-casein
LrP	SPIVPFSEQRQILNPTNGENLRLPVH	1::CBI63375.1	beta-casein
LrP	SPPQSKVAPFPQPVPYPYQ	1::CBI63375.1	beta-casein
LrP	SPPQSKVAPFPQPVPYPYQQR	1::CBI63375.1	beta-casein
LrP	SPPQSKVAPFPQPVPYPYQQRDTPVQ	1::CBI63375.1	beta-casein
LrP	SSPRNEPIYYQHR	1::CBZ41787.1	kappa-casein
LrP	VHKAVLVAQ	1::XP_014697927.1	osteopontin
LrP	VLSPQSKVAPFPQPVPYPYQQR	1::CBI63375.1	beta-casein
LrP	VVPQNILPLAQPIVP	1::CBI63375.1	beta-casein
LrP	YQDPQLGLTGEFDPATQPIVPVH	1::CBI63375.1	beta-casein
LrP	YQDPQLGLTGEFDPATQPIVPVHNP	1::CBI63375.1	beta-casein

Table S2. Cell viability at different concentrations of peptides from donkey milk against VERO cells. In the table are reported the data of cytotoxicity at different concentrations (12.5 $\mu\text{g mL}^{-1}$, 25 $\mu\text{g mL}^{-1}$, 50 $\mu\text{g mL}^{-1}$) of peptides from donkey milk inoculated with *L. rhamnosus* 17D10 (LrP), *L. lactis* subsp. *cremoris* 40FEL3 (LcP), and not fermented (CtlP), as determined by cell viability assays in VERO cells at 72 h post-treatment. The experiment was performed in triplicate for each of the three biological replicates of each extract (LrP, LcP and CtlP). The percentage of cell viability were calculated by comparison with the mock control, that corresponds to the cells treated with the vehicle (DMSO).

Peptide concentration: 50 $\mu\text{g mL}^{-1}$						
Sample	Cell viability			Percentage of cell viability		
LrP1	36533885	37553390	35772433	95.18534	97.84156	93.20145
LrP2	38039017	38775237	39488092	99.10681	101.025	102.8822
LrP3	39143523	37211438	37909358	101.9845	96.95063	98.76899
LcP1	39622462	38119854	35878028	103.2323	99.31742	93.47657
LcP2	38110826	38095043	43853680	99.2939	99.25278	114.2563
LcP3	38596873	41738311	37591506	100.5602	108.7449	97.94086
CtlP1	39071437	47628208	42718672	101.7967	124.0905	111.2992
CtlP2	42613112	34929593	37602818	111.0241	91.00552	97.97033
CtlP3	39434979	37903772	38160869	102.7438	98.75444	99.42428
Mock: 38381841						

Peptide concentration: 25 $\mu\text{g mL}^{-1}$						
Sample	Cell viability			Percentage of cell viability		
LrP1	39632899	38973687	28254288	99.4643	97.80995	70.9081
LrP2	38679411	31348368	34822648	97.0714	78.67313	87.39233
LrP3	38078693	44468358	33660753	95.5638	111.5996	84.47639
LcP1	31867723	34582361	41973477	79.9765	86.78930	105.3383
LcP2	41146158	39052769	35938920	103.2620	98.00841	90.19377
LcP3	33136835	39395638	43409878	83.16154	98.86889	108.9431
CtlP1	42730838	38607934	40469730	107.2390	96.89204	101.5644
CtlP2	38607934	39486199	44389277	96.89204	99.09617	111.4011
CtlP3	43161758	42205689	36079851	108.3205	105.9211	90.54746
Mock: 39846342						

Peptide concentration: 12.5 $\mu\text{g mL}^{-1}$						
Sample	Cell viability			Percentage of cell viability		
LrP1	39637461	38899411	36344316	99.07969	97.23482	90.84799
LrP2	39266154	39395638	33990007	98.15155	98.47522	84.96304
LrP3	36187571	40122656	39559713	90.4561	100.2925	98.88535
LcP1	38360042	41610004	41146158	95.88659	104.0103	102.8509
LcP2	38360042	41681482	39947003	95.88659	104.1890	99.85343
LcP3	38135394	42571914	45855333	95.32505	106.4147	114.6221

