

Table S5. Unique expressed bioactive peptides in human colostrum.

Parent proteins	Protein description	Peptides	Function
P05814	CSN2	SPTIPFFDPQIP	Increase cellular growth
P05814	CSN2	NQELLLNPTHQIYPV TQPLAPVHNP	Antimicrobial
P05814	CSN2	GRVMPVLKSPTIPFF DPQIPK, GRVM(+15.99)PVLKS PTIPFFDPQIPK	Immunomodulatory
P05814	CSN2	LLNQELLLNPTHQIY PVTQPLAPVHNPISV, LLNQELLLNPTHQIY PVTQPLAPVHNPIS(+ 79.97)V	Antimicrobial
P05814	CSN2	LLNPTHQIYPVTQPL APVHNPIS	Antimicrobial
P05814	CSN2	DTVYTKGRV	ACE-inhibitory
P05814	CSN2	DLENLHLP	ACE-inhibitory
P05814	CSN2	TQPLAPVHNPIS	Antimicrobial
P05814	CSN2	ELLLNPTHQIYPVTQP LAPVHNPIS	Antimicrobial
P05814	CSN2	SPTIPFFDPQIPK	Increase cellular growth
P05814	CSN2	QELLLNPTHQIYPVT QPLAPVHNPISV	Antimicrobial
P05814	CSN2	NQELLLNPTHQIYPV TQPLAPVHNPISV, NQELLLNPTHQIYPV TQPLAPVHNPIS(+79. 97)V	Antimicrobial
P05814	CSN2	EPIPYGFLPQN	ACE-inhibitory
P05814	CSN2	LLNPTHQIYPVTQPL APVHNPIS	Antimicrobial
P05814	CSN2	GRVMPVLKSPTIPFF DPQIP, GRVM(+15.99)PVLKS PTIPFFDPQIP	Immunomodulatory
P05814	CSN2	VMPVLKSPTIPFFDPQ IPK, VM(+15.99)PVLKSPTI PFFDPQIPK	Immunomodulatory
P05814	CSN2	LTDLENLHLPLP	ACE-inhibitory
P05814	CSN2	ETIESLSSSEESITEY, ETIES(+79.97)LS(+79.9	Increase cellular growth

		7)SSEESITEY, ETIESLSSEES(+79.97 )ITEY, ETIES(+79.97)LS(+79.9 7)SS(+79.97)EESITEY	
P05814	CSN2	LNPTHQIYPVTQPLA PVHNPIS	Antimicrobial
P05814	CSN2	MPVLKSPTIPFFDPQI PK, M(+15.99)PVLKSPTIP FFDPQIPK	Immunomodulatory
P05814	CSN2	TQPLAPVHNPISV	Antimicrobial
P05814	CSN2	MPVLKSPTIPFFDPQI P, M(+15.99)PVLKSPTIP FFDPQIP	Immunomodulatory
P05814	CSN2	NQELLLNPTHQIYPV TQPLAPVHNPIS	Antimicrobial
P05814	CSN2	NQELLLNPTHQIYP	Antimicrobial
P05814	CSN2	LLNPTHQIYPVTQPL APVHNPISV, LLNPTHQIYPVTQPL APVHNPIS(+79.97)V	Antimicrobial
P05814	CSN2	TIESLSSEESITEYK, TIESLSS(+79.97)SEESI TEYK, TIESLS(+79.97)SS(+79. 97)EESITEYK, TIES(+79.97)LS(+79.97 )S(+79.97)SEESITEYK	Increase cellular growth
P05814	CSN2	LNQELLLNPTHQIYP VTQPLAPVHNPISV	Antimicrobial
P05814	CSN2	DLENLHLPLP	ACE-inhibitory
P05814	CSN2		Antimicrobial
P05814	CSN2	NQELLLNPTHQIYPV TQ	Antimicrobial
P05814	CSN2	VLKSPTIPFFDPQIP	Increase cellular growth
P05814	CSN2	LNQELLLNPTHQIYP VTQPLAPVHNPIS	Antimicrobial
P05814	CSN2	YPVTQPLAPVHNPIS V, YPVTQPLAPVHNPIS( +79.97)V	Antimicrobial
P05814	CSN2	RETIESLSSEESITEY	Increase cellular growth

		K, RETIESLS(+79.97)SSE ESITEYK, RETIESLS(+79.97)SS( +79.97)EESITEYK, RET(+79.97)IESLSS(+7 9.97)S(+79.97)EESITE YK	
P05814	CSN2	TDLENLHLPLP	ACE-inhibitory
P05814	CSN2		Antimicrobial
P05814	CSN2	LLNQELLLNPTHQIY PVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	NPTHQIYPVTQPLAP VHNPIV, NPTHQIYPVTQPLAP VHNPI(+79.97)V	Antimicrobial
P05814	CSN2	ETIESLSSEESITEYK QKVE, ETIESLSS(+79.97)S(+7 9.97)EESITEYKQKVE	Increase cellular growth
P05814	CSN2	T(+79.97)IESLSSSEESI TEY, TIESLSSEESITEY, T(+79.97)IESLSSS(+79. 97)EESITEY	Increase cellular growth
P05814	CSN2	QDKIYPSFQPQPL	ACE-inhibitory
P05814	CSN2	NQELLLNPTHQIYPV	Antimicrobial
P05814	CSN2	LLNQELLLNPTHQIY PV	Antimicrobial
P05814	CSN2	VLKSPTIPFFDPQIPK	Increase cellular growth
P05814	CSN2	LLLNPTHQIYPVTQPL APVHNPI	Antimicrobial
P05814	CSN2	LLLNQELLLNPTHQI YPVTQPLAPVHNPI V	Antimicrobial
P05814	CSN2	QIYPVTQPLAPVHNPI SV	Antimicrobial
P05814	CSN2	NQELLLNPTHQIYPV TQPLAPVH	Antimicrobial
P05814	CSN2	NQELLLNPTHQIYPV TQPLAPVHNPI	Antimicrobial
P05814	CSN2	VPQPIPQ	ACE-inhibitory
P05814	CSN2		ACE-inhibitory
P05814	CSN2	DLENLHLPLPLL	ACE-inhibitory

P05814	CSN2		Antimicrobial
P05814	CSN2	ELLNPTHQIYPVTQP LAPVHNPIV	Antimicrobial
P05814	CSN2	RETIESLSSEESITEY, RETIESLSS(+79.97)SE ESITEY, RETIESLSSS(+79.97)E ESIT(+79.97)EY, RETIES(+79.97)LS(+79 .97)S(+79.97)SEESITE Y	Increase cellular growth
P05814	CSN2	NQELLNPTHQIYPV T	Antimicrobial
P05814	CSN2	TIPFFDPQIPK	Increase cellular growth
P05814	CSN2	LNQELLNPTHQIYP V	Antimicrobial
P05814	CSN2	LLNPTHQIYPVTQPL APVHNPIV, LLNPTHQIYPVTQPL APVHNPIV(+79.97)V	Antimicrobial
P05814	CSN2	ELLNPTHQIYPVTQP LAPVHNPI	Antimicrobial
P05814	CSN2	ETIESLSS(+79.97)S(+7 9.97)EESITEYKQ, ETIESLSSEESITEYK Q, ETIESLS(+79.97)SSEE SITEYKQ, ETIESLS(+79.97)S(+79 .97)S(+79.97)EESITEY KQ	Increase cellular growth
P05814	CSN2	DLENLHLPLPL	ACE-inhibitory
P05814	CSN2		Antimicrobial
P05814	CSN2	RETIESLSS(+79.97)S(+ 79.97)EESITEYKQK, RETIESLSSEESITEY KQK, RETIESLSSS(+79.97)E ESITEYKQK, RETIESLS(+79.97)S(+7 9.97)S(+79.97)EESITE YKQK	Increase cellular growth
P05814	CSN2	LWSVPQPK	Antioxidant
P05814	CSN2		ACE-inhibitory

P05814	CSN2	YPSFQPQPLI	ACE-inhibitory
P05814	CSN2	PTIPFFDPQIPKLT	Increase cellular growth
P05814	CSN2	RETIESLSS(+79.97)S(+79.97)EESITEYKQKVE, RETIESLSSEESITEYKQKVE, RETIESLS(+79.97)S(+79.97)S(+79.97)EESITEYKQKVE	Increase cellular growth
P05814	CSN2	LNPTHQIYPVTQPLA PVHNPISV	Antimicrobial
P05814	CSN2	YPFVEPIP	Opioid
P05814	CSN2		Anticancer
P05814	CSN2		promote beta-cell development
P05814	CSN2		
P05814	CSN2	ETIESLSSS(+79.97)EESITEYK, ETIESLSSEESITEYK , ET(+79.97)IES(+79.97)LSSEESITEYK, ETIES(+79.97)LS(+79.97)S(+79.97)SEESITEYK	Increase cellular growth
P05814	CSN2	QALLNQELLNPTH QIYPVTQPLAPVHNPI SV	Antimicrobial
P05814	CSN2	PFFDPQIPK	ACE-inhibitory
P05814	CSN2	DTVYTKGRVMP, DTVYTKGRVM(+15.99)P	ACE-inhibitory
P05814	CSN2	IESLSS(+79.97)SEESITEYK, IESLSSSEESITEYK, IES(+79.97)LS(+79.97)SS(+79.97)EESITEYK	Increase cellular growth
P05814	CSN2	ETIESLSS(+79.97)S(+79.97)EESITEYKQK, ETIESLSSEESITEYKQK, ETIESLSSS(+79.97)EESITEYKQK	Increase cellular growth
P05814	CSN2	SPTIPFFDPQIPKLT	Increase cellular growth

P05814	CSN2	VPYPQRA	Antioxidant
P05814	CSN2		Antimicrobial
P05814	CSN2		ACE-inhibitory
P05814	CSN2	PVTQPLAPVHNPISV	Antimicrobial
P05814	CSN2	GRVMPVLKSPTIPFF DPQIPKLT, GRVM(+15.99)PVLKS PTIPFFDPQIPKLT	Immunomodulatory
P05814	CSN2	IPFFDPQIPK	ACE-inhibitory
P05814	CSN2	GRVM(+15.99)PVLKS PTIPFFD, GRVMPVLKSPTIPFF D	Immunomodulatory
P05814	CSN2	PVLKSPTIPFFDPQIP	Immunomodulatory
P05814	CSN2	SPTIPFFDPQIPKLT	Increase cellular growth
P05814	CSN2	ETIESLSSEESITE, ET(+79.97)IESLSSEE SITE	Increase cellular growth
P05814	CSN2	LKSPTIPFFDPQIPK	Increase cellular growth
P05814	CSN2	VTQPLAPVHNPISV	Antimicrobial
P05814	CSN2	RETIESLSS(+79.97)S(+ +79.97)EESITEYKQ, RETIESLSSS(+79.97)E ESITEYKQ, RETIESLSSEESITEY KQ, RETIESLS(+79.97)S(+7 9.97)S(+79.97)EESITE YKQ	Increase cellular growth
P05814	CSN2	LLNPTHQIYPVTQPL APVHNPI	Antimicrobial
P05814	CSN2	IYPVTQPLAPVHNPIS V	Antimicrobial
P05814	CSN2	QELLLNPTHQIYPVT QPLAPVHNPIS	Antimicrobial
P05814	CSN2	LTDLENLH	ACE-inhibitory
P05814	CSN2	TIESLSSEESITEYKQ KVE	Increase cellular growth
P05814	CSN2	ETIESLSSEESITEYK QKV	Increase cellular growth
P05814	CSN2	SPTIPFFDPQIPKL	Increase cellular growth
P05814	CSN2	YPSFQPQPLIYP	ACE-inhibitory
P05814	CSN2	KDTVYTKGRVMP, KDTVYTKGRVM(+15.	ACE-inhibitory

		99)P	
P05814	CSN2	PTIPFFDPQIPK	Increase cellular growth
P05814	CSN2	LNQELLLNPTHQIYP	Antimicrobial
P05814	CSN2	ALLLNQELLLNPTHQ IYPVTQPLAPVHNPI V	Antimicrobial
P05814	CSN2	LLNQELLLNPTHQIY PVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	HQIYPVTQPLAPVHN PIS	Antimicrobial
P05814	CSN2	NQELLLNPTHQIYPV TQP	Antimicrobial
P05814	CSN2	KSPTIPFFDPQIPK	Increase cellular growth
P05814	CSN2	DLENLHLPL	ACE-inhibitory
P05814	CSN2	LHLPLPLLQP	ACE-inhibitory
P05814	CSN2	FFDPQIPK	ACE-inhibitory
P05814	CSN2	TVYTKGRVMPVL, TVYTKGRVM(+15.99) PVL	ACE-inhibitory
P05814	CSN2	LLNQELLLNPTHQIY P	Antimicrobial
P05814	CSN2	ELLLNPTHQIYPVTQP LAPVHNPI	Antimicrobial
P05814	CSN2	LNQELLLNPTHQIYP VTQPLAPVHNPI	Antimicrobial
P05814	CSN2	QELLLNPTHQIYPV	Antimicrobial
P05814	CSN2	DTVYTKGRVMPV, DTVYTKGRVM(+15.9 9)PV	ACE-inhibitory
P05814	CSN2	YPVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	PTIPFFDPQIPKL	Increase cellular growth
P05814	CSN2	GRVMPVLKSPTIPFF DPQIPKLT, GRVM(+15.99)PVLKS PTIPFFDPQIPKLT	Immunomodulatory
P05814	CSN2	IYPVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	VMPVLKSPTIPFFDPQ IPKLT, VM(+15.99)PVLKSPTI PFFDPQIPKLT	Immunomodulatory
P05814	CSN2	TIPFFDPQIP	ACE-inhibitory
P05814	CSN2	IESLSS(+79.97)S(+79.9 7)EESITEYKQ	Increase cellular growth

P05814	CSN2	PVLKSPTIPFFDPQIPK	Immunomodulatory
P05814	CSN2	TDLENLHLPLPL	Antimicrobial
P05814	CSN2	PVLKSPTIPFFDPQIPK LTD	Immunomodulatory
P05814	CSN2	QALLNQELLLNPTH QIYPV	Antimicrobial
P05814	CSN2	MPVLKSPTIPFFDPQI PKLTD, M(+15.99)PVLKSPTIP FFDPQIPKLTD	Immunomodulatory
P05814	CSN2	TVYTKGRV	ACE-inhibitory
P05814	CSN2	YPVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	ALLLNQELLLNPTHQ IYPVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	LLLNPTHQIYPVTQPL APVHNP	Antimicrobial
P05814	CSN2	TIESLSS(+79.97)S(+79. 97)EESITEYKQ, TIESLSSSEESITEYKQ , TIESLSS(+79.97)SEESI TEYKQ	Increase cellular growth
P05814	CSN2	VM(+15.99)PVLKSPTI PFFDPQIP, VMPVLKSPTIPFFDPQ IP	Immunomodulatory
P05814	CSN2	RETIESLSSSEESIT	Increase cellular growth
P05814	CSN2	RETIESLSS(+79.97)S( +79.97)EESITE, RETIESLSSSEESITE	Increase cellular growth
P05814	CSN2	IPFFDPQIP	ACE-inhibitory
P05814	CSN2	DLENLHL	ACE-inhibitory
P05814	CSN2	LLNQELLLNPTHQIY PVTQPLAPVH	Antimicrobial
P05814	CSN2	LLLNQELLLNPTHQI YPVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	LLNQELLLNPTHQIY PVTQPLAPVHNP	Antimicrobial
P05814	CSN2	EPIPYGFLP	ACE-inhibitory
P05814	CSN2	DKIYPSFQPQPLIYP	ACE-inhibitory
P05814	CSN2	VMPVLKSPTIPFFDPQ IPKLT, VM(+15.99)PVLKSPTI PFFDPQIPKLT	Immunomodulatory



P05814	CSN2	TDLENLHLP	ACE-inhibitory
P05814	CSN2	TIPFFDPQIPKL	Increase cellular growth
P05814	CSN2	DTVYTKGRVM(+15.9 9)	ACE-inhibitory
P05814	CSN2	LNQELLNPETHQIYP VTQ	Antimicrobial
P05814	CSN2	IYPSFQPQLIYP	ACE-inhibitory
P05814	CSN2	LNQELLNPETHQIYP VTQPLAPVHNP	Antimicrobial
P05814	CSN2	LLNQELLNPETHQIY	Antimicrobial
P05814	CSN2	NQELLNPETHQIYPV TQPLAPVHN	Antimicrobial
P05814	CSN2	LNQELLNPETHQIYP VTQPLAPVH	Antimicrobial
P05814	CSN2	PVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	ELLNPETHQIYPVTQP LAPVHN	Antimicrobial
P05814	CSN2	IYPSFQPQLI	ACE-inhibitory
P05814	CSN2	LKSPTIPFFDPQIP	Increase cellular growth
P05814	CSN2	LNQELLNPETHQIYP VTQP	Antimicrobial
P05814	CSN2	EIPYGFPLQ	ACE-inhibitory
P05814	CSN2	YPVTQPLAPVHNP	Antimicrobial
P05814	CSN2	DKIYPSFQPQL	ACE-inhibitory
P05814	CSN2	LLNQELLNPETHQI YPVTQPLAPVHNPI	Antimicrobial
P05814	CSN2	QELLNPETHQIYPVT QPLAPVHNP	Antimicrobial
P05814	CSN2	RVMPVLKSPTIPFFDP QIP	Immunomodulatory
P05814	CSN2	LTDLENLHLP	ACE-inhibitory
P05814	CSN2	LTDLENLHLPL	ACE-inhibitory
P05814	CSN2	LENLHLPLP	ACE-inhibitory
P05814	CSN2	WSVPQPK	Antioxidant
P05814	CSN2		ACE-inhibitory
P05814	CSN2	LHLPLPL	ACE-inhibitory
P05814	CSN2	KSPTIPFFDPQIP	Increase cellular growth
P05814	CSN2	PVTQPLAPVHNP	Antimicrobial
P05814	CSN2	SFQPQLIYPF	ACE-inhibitory
P05814	CSN2	HQIYPVTQPLAPVHN P	Antimicrobial
P05814	CSN2	PTIPFFDPQIP	Increase cellular growth
P05814	CSN2	QELLNPETHQIYPVT	Antimicrobial

		QPLAPVHNPI	
P05814	CSN2	LNQELLLNPTHQIYP VT	Antimicrobial
P05814	CSN2	EHQDKIYPSFQPQPLI YP	ACE-inhibitory
P05814	CSN2	GRVMPVLKSPTIPFF DPQIPKL, GRVM(+15.99)PVLKS PTIPFFDPQIPKL	Immunomodulatory
P05814	CSN2	ENLHLPLPLLQP	ACE-inhibitory
P05814	CSN2	QELLLNPTHQIYPVT	Antimicrobial
P05814	CSN2	IYPSFQPQPLIYYPF	ACE-inhibitory
P05814	CSN2	RVMPVLKSPTIPFFDP QIPK	Immunomodulatory
P07498	CSN3	NPYVPR	Antioxidant
P07498	CSN3	NNPYVPR	Antioxidant
P07498	CSN3	NPYVPR	Antioxidant
P07498	CSN3	NPAVVRP	ACE-inhibitory
P07498	CSN3	NPAVVRPH	ACE-inhibitory
P07498	CSN3	TYYANPAVVRP	ACE-inhibitory
P07498	CSN3	ANPAVVRPHA	ACE-inhibitory