

Human β -casein: partial cDNA sequence and apparent polymorphism

Ravi S.Menon and Richard G.Ham

Department of Molecular, Cellular and Developmental Biology, Campus Box 347, University of Colorado,
Boulder, CO 80309, USA
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We have isolated and sequenced a partial cDNA clone for human β -casein, the major protein in human milk. The clone includes coding sequence for amino acids 146-212 of the mature protein and the entire 3' non-coding region. Comparison of the derived amino acid sequence with the reported peptide sequence (1) reveals amino acid differences in several positions: Q instead of E at positions 158, 167, and 200; V instead of L or Q in position 169 and T instead of P in positions 192 and 199. Furthermore, the reported amino acid sequence in positions 202-208 are STTZABH whereas the corresponding region in our clone codes for LAPVHN and a single codon deletion in the region corresponding to H. The last four amino acids are the same. This observation has been confirmed on another independent clone from the same library. It appears that human β -casein, like its bovine counterpart (2), exhibits a high degree of polymorphism. Whether the amino acid differences observed in positions 202-208 are a reflection of polymorphism or alternative exon splicing is currently being investigated.

CTT GCA CTT CCC CCT CAG CCC CTG TGG TCT GTT CCT CAG CCC AAA GTC CTG CCT
L A L P P Q P L W S V P Q P K V L P
E

ATC CCC CAG CAA GTG GTG CCC TAC CCT CAG AGA GCT GTG CCT GTT CAA GCC CTT
I P Q Q V V P Y P Q R A V P V Q A L
E L V

CTG CTC AAC CAA GAA CTT CTA CTT AAC CCC ACC CAC CAG ATC TAC CCT GTG ACT
L L N Q E L L L N P T H Q I Y P V T
P P

CAG CCA CTT GCC CCA GTT CAT AAC *** CCC ATT AGT GTC TAAGAAGATTTCAAAGTTA
Q P L A P V H N P I S V @
E S T T Z A B H

ATTTCCCTCCTTATTTTGAATTGACTGAGACTGGAAATATGATGCCTTTTCCGTCCTTTGTATCACGTTA
CCCCAAATTAAGTATGTTTGAATGACTTTATATGGAATAATGAACCTTTGTCCTTTATTTATTTATATAT
TATGTCATTCATTTATTTGAAATTTGACTCATGAACATTTTACATTTTCCAAATCTTAATTCAACTAGTAC
CACAGAAGTTCAATACTCATTGGAATGCTACAAACATATCAAACATATGTATACAAATTGTTTCTGGAA
TTGTGCTTATTTTATTTCTTTAAGAATCTATTTCCCTTCCAGTCATTTCAATAAATTATTCCTTAAGCAT (A)_n

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