

Cloning and nucleotide sequence of an ovine prolactin cDNA

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We have isolated cDNA clones encoding ovine prolactin from a lamb pituitary cDNA library constructed in λ gt10, using a cross-hybridizing bovine clone (1). The complete nucleotide sequence of a single clone, sPRL1, was determined by dideoxy sequence analysis (2) of both strands and is presented below (Fig. 1). The clone is 880 base pairs in length and includes the entire coding region for a 229 amino acid prolactin prohormone, including a 30 amino acid signal peptide. The translated sequence encoding the 199 amino acid mature prolactin polypeptide is identical to that previously determined by amino acid sequence analysis (3) with a single exception. Analysis of sPRL1 and other clones reveals an asparagine at position +10 in the mature hormone, as opposed to aspartic acid determined from protein sequencing (3). This difference may reflect a polymorphism between different sheep populations. Comparison of the ovine nucleotide sequence with the corresponding bovine cDNA sequence (1) gives an overall homology of 97.5%.

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      M D S K G S A O K C S R I L L L L V V S N L L L I C O G V V S T P
CGTGTTCCTTGAATCATCCACCATTGGACAGCAAAGGTTTCAGCGCAGAAAGGTCGCCCTGCTCTGCTGCTGGTGGTCAAACTACTCTTGTGTGAGGGTGTGGTCTCCACCCC 120
      V C P N G P G N C Q V S L R D L F D R A V M V S H Y I H N L S S E M F N E F D K
TGCTGTGTCCTCCAAATGGCGCTGCCAACTGCCAGGTGTCCCTTCGAGACCTGTTGACCGGGCAGTCATGGTGTCCCACTACATCCATAACCTCTCCTCGAAATGTTCAATGAATTTGATAA 240
      R Y A O G G K G F I T H A L N S C H T T S S L P T P E D K E Q A O Q T H H E V L M S
AAGGTATGCCAGGGCAAAAGGTTTCATTACCATGGCCCTCAAGAGCTGCCACACCTCCTCCCTTCTTACCCCTGAAGACAAGAAGCCCAACAGAECACCACATGAAGCTTCATGAG 360
      L I L G L L R S W N L P L Y H L V T E V R G M K G V P D A I L S R A I E I E E
CTTGATTCCTGGGTTGCTGCCCTCCTGGAATGACCCCTGTATACCTAGTCACAGAGGTGCGGGGATGAAAAGGATCCCGATGCTATCCTATCGAGGGCCATAGAGATTTGAGGAAGA 480
      N K R L L E G H E M I F G O V I P C A K E T E P Y P V M S G L P S L O T K D E D
AAACAAGACTTCTGGAAGCATGGAGATGATATTTGGCCAGGTTATTCTGGAGCCAAAGAGACTGAGCCCTACCTGTGTGGTCCAGGACTCCCATCCCTGCCAACTAAGGATGAAGA 600
      A R H S A F Y N L L H C L R R D S S K I D T Y L K L L N C R I I Y N N N C
TGCACGTCATTCGCTTTTACAACTGCTCCACTGCCTGGCAGGGATTCAAGCAAGATTGACACTTACCTTAAGCTCCTGAAATTCGAGAATCATCTACAACAACAACACTGCTAAGGCCCA 720
      CATTTCATCCATTCAGATGGTCTTAATGATCCATCCCTGGCAAACCTTCTCGAGCTTTATAGCTTTTTAATGCATGCTGGCTCTAATGGGTTTCATCTAAATAAAAAACA
840
      GACTCTGTGAAATGTCAAAATCTAAAAAATAAAAAA
880

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Fig. 1. Nucleotide sequence and deduced amino acid sequence of the cDNA clone sPRL1 encoding ovine prolactin. The codon corresponding to amino acid +10 (asparagine) is underlined.

References

- (1) Sasavage, N.L., Nilson, J.H., Horowitz, S. and Rotman, F.M. (1982) *J. Biol. Chem.* **257**, 678-681.
- (2) Sanger, F., Nickelson, S. and Coulson, A.R. (1977) *Proc. Natl. Acad. Sci. U.S.A.* **74**, 5463-5467.
- (3) Li, C.H. (1976) *Int. J. Pept. Protein Res.* **8**, 205-224.