

Nucleic acid and amino acid sequences of dog β LH: comparison to rat, cow and human β LH

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Luteinizing hormone (LH) is a member of a glycoprotein hormone family which includes the pituitary-derived follicle stimulating hormone (FSH) and thyroid stimulating hormone (TSH), as well as the placental derived chorionic gonadotropin (CG) (1). The hormone family is characterized by a noncovalent complex of two unique subunits, α and β . While the α subunit is shared, the β subunit differs and confers receptor specificity (1). In this report, we present the sequence of the dog β LH cDNA isolated from a λ gt10 dog pituitary cDNA library (5) and compare its amino acid (aa) and nucleic acid homologies to that of rat (2), cow (3), and human (4) β LH.

The mature canine β LH protein (1-121 aa) shows an 89% homology with rat, 84% homology with cow and 74% homology with human β LH. Similarities at the nucleic acid level across the same coding region are 84% (rat), 88% (cow), and 82% (human).

| | | | | | | | | | | | | |
|-------|-----------|-------------|-----------|-----------|-----------|-----------|---------|----------|---------|---------|----------|----------|
| aa | -20 | | | -10 | | | | 1 | | | | 10 |
| | | CGCTCCAGGGG | GGTCTGCTG | TGGCTGCTG | AGTGTGGG | TGGGGTGGG | GGCATCC | AGGGGGCC | ATTGCG | GGCCGTG | TGCCGGCC | CCATC |
| Dog | | LeuGlnGly | LeuLeuTrp | LeuLeuLeu | ValGly | ValTrp | AlaSer | ArgGly | ProLeu | ArgPro | LeuCys | ArgPro |
| Rat | MetGluArg | | | | ProSerVal | | | | | | | Val |
| Cow | MetPhe | | | | GlyAla | | | | | | | Gln |
| Human | MetGluMet | | Leu | | MetAla | Ala | | Glu | | Trp | | His |
| | | | | 20 | | | | 30 | | | | 40 |
| | | AACGCCAC | CTGGCTG | TGAGAAC | GGAAGC | CTGCGGGT | CTGTATC | CACCTTC | CACCACC | ACCATCT | GTGCGGG | CTACTGCC |
| Dog | | AsnAla | ThrLeu | AlaAla | GluAsn | GluAla | CysPro | ValCys | IleThr | PheThr | ThrThr | IleCys |
| Rat | | | | | | | | | | | | AlaGly |
| Cow | | | | | | | | | | | | TyrCys |
| Human | IleVal | | Lys | | Gly | | ValAsn | Thr | | | | ThrLys |
| | | | | | | | | | | | | MetVal |
| | | | | 50 | | | | 60 | | | | 70 |
| | | CGAGTGTG | CCACCGC | CTGCCAC | CTGTG | CCCCAGC | AGTGTGC | ACCTAC | CATGAG | CTGCAC | TTTGCTT | CCATCC |
| Dog | | ArgVal | LeuPro | AlaAla | LeuPro | ProVal | ProGln | ProVal | CysThr | TyrHis | GluLeu | HisPhe |
| Rat | | | | | | | | | | | | AlaSer |
| Cow | | | | | | | | | | | | IleArg |
| Human | | ValIle | | Met | | Arg | | Arg | | Arg | | Val |
| | | GlnVal | | Leu | | Val | | Arg | | AspVal | | Glu |
| | | | | | | | | | | | | |
| | | | | 80 | | | | 90 | | | | 100 |
| | | CCGCTGGC | GTGGAC | CCCATGG | TCTCCTT | CCCCGTG | CGCCCT | CAGCTG | CTGTG | GGCCCT | GCCGCT | CAGCAA |
| Dog | | ProPro | GlyVal | AspPro | MetVal | SerPhe | ProVal | AlaLeu | SerCys | ArgCys | GlyPro | CysArg |
| Rat | | | | | | | | | | | | LeuSer |
| Cow | | | | | | | | | | | | AsnSer |
| Human | Arg | | Val | | | | | His | | | | ArgSer |
| | | | | | | | | | | | | ThrThr |
| | | | | | | | | | | | | |
| | | | | 110 | | | | 120 | | | | |
| | | CCCAGAG | CTCAAT | CTTGGC | CTGTG | ACCGCC | CCCTG | CTCCG | GGCCCT | CCTST | TCTCTA | AGGATC |
| Dog | | ProArg | AlaGln | SerLeu | AlaCys | AspArg | ProLeu | LeuPro | GlyLeu | LeuPhe | LeuLeu | |
| Rat | | | | | | | | | | | | |
| Cow | | | | | | | | | | | | |
| Human | | ThrPro | | ProMet | ThrLeu | His | | Pro | | AspIle | | |
| | | LysAsp | HisPro | Thr | | His | Gln | Ser | | | | |

AGCAGATGCTCCTTCCCTCCCTCCCAATAAAGGCTTCTCAAACCTGCAAAAAAAAA

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