

Characterisation of a cDNA for porcine PDH-E₁α and comparison with the human cDNA

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We screened a λgt11 porcine muscle library with a 900 bp EcoRI-PstI fragment of the human clone for PDH-E₁α (1). A clone (PPDH2) of 2100 bp was characterised and shows an open reading frame of 1170 bp. Compared to the human cDNA, the first methionine codon is missing. A difference of only two amino acids from the human leader sequence (Val 15→Ala, Ala 16→Ser) was observed. The porcine N-terminal shows 100% homology in amino acid sequence with the human as well as with the bovine (2). The two serine phosphorylation sites also show, as expected from peptide sequencing data (3), 100% homology with the human sequence. In the first phosphorylation site, no difference in choice of codon can be found. The second phosphorylation site of the porcine clone differs from the human clone at codon 289, accounting for the difference in NcoI restriction site, and at codons 295 and 296. Overall, only seven amino acids, two of which are in the leader sequence are different from the human clone. The five amino acids in the mature protein which are different are: Arg 142→Lys, Gly 146→Ala, Val 219→Ile, Ala 349→Pro and Thr 354→Ala. This gives 98% homology. The base pair homology is 94%. When compared to the sequence of Koike *et al.* (4) only three amino acids are different, giving an even higher homology.

REFERENCES

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GGGAAGATGCTGCCGCCGCTCTCCCGTGTGTGCGGGCGTCCCGCAGAAAGCCGGCAAGC      60
AGG                                     C T GCTTCT
AGAGTGCTGGTGGCGTCCCGTACTTTTGCAAATGATGCTACATTTGAAATTAAGAAATGT      120
      A A
GATCTTCACCGCTGGAAGAGGGCCACCTGTCCACCAGGCTCACCAGGGAGGATGGC      180
      A A
CTAAAGTACTACAGGATGATGCAGACTGTTCCGCGAATGGAGTTAAAAGCAGATCAGCTC      240
      C A
TATAAACAGAAAATTATTCGTGTTTCTGTCACTTGTGTGATGGTCAGGAAGCTTGTGGC      300
      C T
GTGGCCTGGAGGCTGGCATAAACCCCTACGGACCATCTGATCACAGCTCACCAGCTCAT      360
      C C C A C G C
GGCTTACCTTTACTCGTGGGCTTCTGTCCGGGAAATTTGCGGAACTTACAGGACGA      420
      T C C G C C A C A G
AGAGGAGGTTGTGGTAAAGGAAAGGAGGATCGATGCATATGTATGCCAAGAAGCTTCTAC      480
      AAA GCT G A C
GGGGCAATGGCATTGTGGGAGCTCAGGTGCCCTGGGAGCTGGGATGCTCTGGCCTGT      540
      C G
AAGTATAATGGAAAAGATGAGGCTGTTTGACTTTGTATGGAGATGGTCTGCTAATCAG      600
      CC A C
GGTCAGATATTTGAAGCTTACAACATGGCAGCTTTGTGGAAATTGCCTTGTGTTTTCATC      660
      ATT
TGTGAGAATAATCGCTATGGGATGGGAACGTCTGTGGAGAGAGCCGACCCAGCTGAC      720
      T G
TACTATAAGAGAGGCGACTTCATTCTGGGCTGAGGGTAGATGGAAATGGATATCTGTGT      780
      C T
GTCCGGGAGGCCACAAGGTTTGCAGTGCCTACTGTAGATCTGGGAAAGGGCCACTACTG      840
      A A T A G C
ATGGAGCTGCAGACTTACCATTGACATGGACACAGTATGAGTGTATCCCGGAGTCAGTTAC      900
      C T
CGTACACGAGAAGAAATTCAGGAAGTAAGAAGTAAGAGTGACCCGATCATGCTTCTCAAG      960
      T T
GATAGAATGGTGAACAGCAATCTTGCCAGTGTGAAGAATTAAGGAAATCGATGTTGAA      1020
      C G G C T G
GTGAGGAAAGAAATTTGAGGATGCTGCACAGTTTGTCTACTGCTGATCCTGAACACCTTTG      1080
      G G CCT C CGCG C G
GAAGAACTCGGCTATCACATCTACTGCAACGCCCTTTTGAAGTCCGGGTGCAAAC      1140
      G G C TCCAGC A T T C T
CAGTGGATCAAGTTTAAGTCCATCAGTTAA      1170
      AGTC OC

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The bases shown under the porcine sequence are the base pairs in the human sequence that are different from the porcine. Whenever three base pairs are shown consecutively, there is also a difference in amino acid (Ref. 1). The numbers at the end of the line are those of Ref. 1.