
Supplementary information

Mitochondrial L-2-hydroxyglutarate is a physiological signalling metabolite

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Title: Mitochondrial L-2-hydroxyglutarate is a physiologic signaling metabolite

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Supplementary Methods

Full-length coding sequences of human MDH2, rat *L2hgdh*, and rat *L2hgdh*-Cyto used for cloning in this study are provided below.

Sequence of human *MDH2*

```
ATGCTCTCCGCCCTCGCCCGGCCTGCCAGCGCTGCTCTCCGCCGCAGCTTCAGCACCT
CGGCCCAGAACAATGCTAAAGTAGCTGTGCTAGGGGCCTCTGGAGGCATCGGGCAGC
CACTTTCACCTTCTCCTGAAGAACAGCCCCTTGGTGAGCCGCCTGACCCTCTATGATAT
CGCGCACACACCCGGAGTGGCCGCAGATCTGAGCCACATCGAGACCAAAGCCGCTG
TGAAAGGCTACCTCGGACCTGAACAGCTGCCTGACTGCCTGAAAGGTTGTGATGTGG
TAGTTATTCCGGCTGGAGTCCCCAGAAAGCCAGGCATGACCCGGGACGACCTGTTCA
ACACCAATGCCACGATTGTGGCCACCCTGACCGCTGCCTGTGCCCAGCACTGCCCCGG
AAGCCATGATCTGCGTCATTGCCAATCCGGTTAATTCCACCATCCCCATCACAGCAGA
AGTTTTCAAGAAGCATGGAGTGTACAACCCCAACAAAATCTTCGGCGTGACGACCCT
GGACATCGTCAGAGCCAACACCTTTGTTGCAGAGCTGAAGGGTTTGGATCCAGCTCG
AGTCAACGTCCCTGTCATTGGTGGCCATGCTGGGAAGACCATCATCCCCCTGATCTCT
CAGTGCACCCCCAAGGTGGACTTTCCCCAGGACCAGCTGACAGCACTCACTGGGCG
GATCCAGGAGGCCCGGCACGGAGGTGGTCAAGGCTAAAGCCGGAGCAGGCTCTGCCA
CCCTCTCCATGGCGTATGCCGGCGCCCGCTTTGTCTTCTCCCTTGTGGATGCAATGAAT
GGAAAGGAAGGTGTTGTGGAATGTTCTTCGTTAAGTCACAGGAAACGGAATGTACC
TACTTCTCCACACCGCTGCTGCTTGGGAAAAAGGGCATCGAGAAGAACCTGGGCATC
GGCAAAGTCTCCTCTTTTGAGGAGAAGATGATCTCGGATGCCATCCCCGAGCTGAAG
GCCTCCATCAAGAAGGGGGAAGATTTTCGTGAAGACCCTGAAGTGA
```

Sequence of rat *L2hgdh*

ATGTGGCCGACTCTGCGTTATGTGGGAGGTGTCTGCGGACGGATTGGGTGCAGCGTT
GCTGGGGGCTTCCTCCGCGCTAGCGGGCCGGTGTCCGGGGTGCTCGGGCTACTCTGC
AGGGGTGGTTCGCAGCTCCAGTACCAGCTCATTTGATATAGTCATCGTTGGTGGTGGAA
TTGTGGGGCTTGCCCTCTGCCAGAACACTCATCCTGAAACATCCCGAACTTTCAATTGG
TGTGGTGGAAAAGGAGAAAGATTTGGCTCTTCACCAGACTGGACGGAACAGTGGTG
TCATACATAGTGGAATTTACTATAAACCGGAGTCACTGAAAGCTAAATTGTGTGTGGA
AGGTGCAGCCCTCATCTATGAGTACTGTAACTCAAGGGAATTCCCTACAGGCAATGT
GGCAAGCTAATAGTAGCTGTTGAACAAGAAGAAATTCCCAGACTTCAGGCCCTGTAT
GAGCGTGGCCTGCAGAATGGAGTCCAAGGCTTGAGGCTGATCCAGCAGGAGGATATA
AAAAAGAAGGAACCATATTGCAGGGGTCTAATGGCTATTGACTGTCCGTACACTGGC
ATTGTGAACTACCAACAGGTAGCGTTGTCATTTGCCCAGGATTTCCAAGAAGCAGGT
GGCTCTATCTTGAAAGATTTGAGAGTAAAGGATATTGGAATAGCTAAAGAAGACCCCTC
CAAGAAGTAAGGATGGGATGAAATATCCAATCGCTGTCAAGAATAGTAAGGGGAAAGG
AAATTCAGTGTGATATGTTGTGACATGTGCCGGTCTTTACTCAGACCGTATTTCAAG
TTGAGTGGCTGCAATCCTGACCCTCAAATTGTCCCATTCCTGGAGATTACCTGGTGT
TAAAGCCAGAAAAGGGCTACCTTGTAAGGAAATATTTATCCGGTCCCGGACAGCC
GACTTCCGTTTCTAGGCGTTCACCTTACACCAAGGCTGGATGGCTCTATTTGGCTCGG
GCCTAATGCAGTGCTTGCCTTTAAACGGGAAGGCTACAGACCCTTTGACTTCAATGCC
AGAGATATTATGGAAGTAATTCTCAAAAGTGGTTTCATTAAATTGGTGTTCAGAAATTT
CTCTTATGGAGCTAGCGAAATATATAAGCCTGTTTTCTCAGTGAAACAGTGAAGCAT
CTTCAAAAGTTCATTCCTGAAATCACCAACGATGTACTTCGAGGCCCTGCTGGAG
TGCGAGCCCAGGCCCTGGACAGAGATGGAAATCTGGTGGACGATTTTGTGTTTGATG
GAGGAGCCGGTGAGATTGGAGATCGAATTCTTCACGTGAGAAATGCACCTTCGCCTG
CAGCCACTTCTCCCTGGCAATTTCTAGAATGATAGCAGAGGAAGTGCAGCAGAGGT
TTAAGTTATGA

Sequence of rat *L2hgdh*-Cyto

ATGTCCAGTACCAGCTCATTTGATATAGTCATCGTTGGTGGTGGGAATTGTGGGGCTTGC
CTCTGCCAGAACACTCATCCTGAAACATCCCGAACTTTCAATTGGTGTGGTGGAAAA
GGAGAAAGATTTGGCTCTTCACCAGACTGGACGGAACAGTGGTGTGCATACATAGTGG
AATTTACTATAAACCGGAGTCACTGAAAGCTAAATTGTGTGTGGAAGGTGCAGCCCTC
ATCTATGAGTACTGTAACCTCAAGGGAATTCCTACAGGCAATGTGGCAAGCTAATAG
TAGCTGTTGAACAAGAAGAAATTCCCAGACTTCAGGCCCTGTATGAGCGTGGCCTGC
AGAATGGAGTCCAAGGCTTGAGGCTGATCCAGCAGGAGGATATAAAAAAGAAGGAA
CCATATTGCAGGGGTCTAATGGCTATTGACTGTCCGTACACTGGCATTGTGAACTACCA
ACAGGTAGCGTTGTCAATTTGCCCAGGATTTCCAAGAAGCAGGTGGCTCTATCTTGAAA
GATTTTCGAGGTAAAGGATATTGGAATAGCTAAAGAAGACCCTCCAAGAAGTAAGGAT
GGGATGAAATATCCAATCGCTGTCAAGAATAGTAAGGGAAAGGAAATTCAGTGTGCA
TATGTTGTGACATGTGCCGGTCTTTACTCAGACCGTATTTTCAGAGTTGAGTGGCTGCA
ATCCTGACCCTCAAATTGTCCCATTCCTGGAGATTACCTGGTGTAAAGCCAGAAAA
GGGCTACCTTGTAAGGAAATATTTATCCGGTCCCGGACAGCCGACTTCCGTTTCTA
GGCGTTCACTTCACACCAAGGCTGGATGGCTCTATTTGGCTCGGGCCTAATGCAGTGC
TTGCCTTTAAACGGGAAGGCTACAGACCCTTTGACTTCAATGCCAGAGATATTATGGA
AGTAATTCTCAAAAGTGGTTTCATTAAATTGGTGTTCAGAAATTTCTCTTATGGAGCTA
GCGAAATATATAAGCCTGTTTTCTCAGTGAAACAGTGAAGCATCTTCAAAAGTTCAT
TCCTGAAATCACCACCAACGATGTACTTCGAGGCCCTGCTGGAGTGCGAGCCCAGGC
CCTGGACAGAGATGGAAATCTGGTGGACGATTTTGTGTTTGATGGAGGAGCCGGTGA
GATTGGAGATCGAATTCTTCACGTGAGAAATGCACCTTCGCCTGCAGCCACTTCTTCC
CTGGCAATTTCTAGAATGATAGCAGAGGAAGTGCAGCAGAGGTTTAAGTTATGA