LD Biopharma, Inc.
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- PRODUCT DATA SHEET -

Name of Product: Recombinant Human HIBADH Protein
Catalog Number: hRP-1836
Manufacturer: LD Biopharma, Inc.

Introduction

HIBADH gene encodes a mitochondrial 3-hydroxyisobutyrate dehydrogenase enzyme, which is a critical enzyme that generates glucose by metabolizing amino acids in the gluconeogenesis pathway. HIBADH participates in valine, leucine, and isoleucine degradation and is a central metabolic enzyme in the valine catabolic pathway. The 3-hydroxy-2-methylpropanoate is used with NAD+ as the substrate, and the three products are 2-methyl-3-oxopropanoate, NADH, and H+. HIBADH is primarily expressed in the mitochondria of various tissues and cells. In neural cells, HIBADH may use the valine that is imported into the brain for energy generation. Previous reports suggested that HIBADH expression is elevated in the neck-piece and mid-piece of the elongating, elongated, and mature sperms that contain the mitochondria during human spermiogenesis. Several studies showed that HIBADH is a motility-related protein, as analyzed by proteomic approach and has genome-wide association in Holstein-Friesian bulls. These data indicated that HIBADH may be involved in maintaining sperm motility and may function as a sperm motility marker.

37aa – 336aa fragment of human HIBADA cDNA (derived from BC032324) was constructed with codon optimization and expressed with a small T7-His-TEV cleavage site Tag (29aa) fusion at its N-terminal. This protein was expressed in E. coli as inclusion bodies. The final product was refolded using our unique "temperature shift inclusion body refolding" technology and chromatographically purified.

Gene Symbol:	HIBADH (NS5ATP1)
Accession Number:	NP_689953.1
Species:	Human
Size:	50 µg / Vial
Composition:	0.5 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose and DTT.
Storage:	In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

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Key References

Tasi YC,et al.,*Characterization of 3-hydroxyisobutyrate dehydrogenase , HIBADH, as a sperm-motility marker.* J. Assist. Reprod. Genet. 30 (4), 505-512 (2013)

Shuai Zhang, et al., The g.-165 T>C Rather than Methylation Is Associated with Semen Motility in Chinese Holstein Bulls by Regulating the Transcriptional Activity of the *HIBADH* Gene. PloS One.*10(7): e0127670. (2015).*

Curtis D ,et al., *Practical Experience of the application of a Weighted Burden Test to Whole Exome Sequence Data for Obesity and Schizophrenia.* Ann Hum Genet. Jan; 80(1): 38-49 (2016)

Applications

1. May be used for in vitro HIBADH mediated metabolizing amino acids in the gluconeogenesis regulation study for sperm or neuronal cells by intracellular delivery of this protein with ProFectin Reagent.
2. May be used for protein-protein interaction mapping.
3. May be used as enzymatic substrate for various proteases.
4. Potential biomarker protein for monitoring cell gluconeogenesis activity in various diseases.
5. As immunogen for specific antibody production.

Quality Control

Purity: > 90% by SDS-PAGE.

Recombinant Protein Sequence

MASMTGGQQMGRGHHHHHHGNLYFQGGEFASKTPVGFIGLGNMGNPMAKNLMKHGYPLIIYDVF
PDACKEFQDAGEQVVSSPADVAEKADRIITMLPTSINAIEAYSGANGILKKVKKGSLLIDSSTI
DPAVSKELAKEVEKMGAVFMDAPVSGGVGAARSGNLTFMVGGVEDEFAAAQELLGCMGSNVVYC
GAVGTGQAAKICNNMLLAISMIGTAEAMNLGIRLGLDPKLLAKILNMSSGRCWSSDTYNPVPGV
MDGVPSANNYQGGFGTTLMAKDLGLAQDSATSTKSPILLGSLAHQIYRMMCAKGYSKKDFSSVF
QFLREEETF