LD Biopharma, Inc.
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- PRODUCT DATA SHEET -

Name of Product: Recombinant Human FHIT Protein
Catalog Number: hRP-1814
Manufacturer: LD Biopharma, Inc.

Introduction

Human bis(5'-adenosyl)-triphosphatase (FHIT) gene, a member of the histidine triad gene family, encodes a diadenosine 5',5'''-P1,P3-triphosphate hydrolase involved in purine metabolism. FHIT cleaves P(1)-P(3)-bis(5'-adenosyl) triphosphate (Ap3A) to yield AMP and ADP. It can also hydrolyze P(1)-P(4)-bis(5'-adenosyl) tetraphosphate (Ap4A), but has extremely low activity with ATP. FHIT modulates transcriptional activation by CTNNB1 and thereby contributes to regulate the expression of genes essential for cell proliferation and survival, such as CCND1 and BIRC5. It plays a role in the induction of apoptosis via SRC and AKT1 signaling pathways. FHIT also inhibits MDM2-mediated proteasomal degradation of p53/TP53 and thereby plays a role in p53/TP53-mediated apoptosis. Induction of apoptosis depends on the ability of FHIT to bind P(1)-P(3)-bis(5'-adenosyl) triphosphate or related compounds, but does not require its catalytic activity, it may in part come from the mitochondrial form, which sensitizes the low-affinity Ca^{2+} transporters, enhancing mitochondrial calcium uptake. FHIT functions as tumor suppressor.

Full-length human FHIT cDNA (146 aa) was constructed with codon optimization using gene synthesis technology 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:	FHIT (AP3Ases; FRA3B)
Accession Number:	NP_002003
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.

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Storage: In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

Key References

Kapitanovic S, et al., *Reduced FHIT expression is associated with tumor progression in sporadic colon adenocarcinoma*. Exp. Mol. Pathol. 96 (1), 92-97 (2014)

Jeong YJ, et al., *Promoter methylation status of the FHIT gene and Fhit expression: association with HER2/neu status in breast cancer patients*. Oncol. Rep. 30 (5), 2270-2278 (2013)

Zuo H, et al., *Activation state-dependent interaction between Galphaq subunits and the Fhit tumor suppressor*. Cell Commun. Signal 11, 59 (2013)

Applications

1. May be used for in vitro FHIT mediated purine metabolism pathway regulation study for various cell's proliferation by intracellular delivery of this protein with ProFectin Reagent.
2. May be used for protein-protein interaction mapping.
3. May be used as specific substrate protein for kinase, ad ubiquitin (Sumo pathway) related enzyme functional screening assays.
4. Potential biomarker protein for prognostic diagnosis of various cancers by monitoring FHIT expression level in tumor.
5. As immunogen for specific antibody production.

Quality Control

Purity: > 90% by SDS-PAGE.

Recombinant Protein Sequence

MASMTGGQQMGRGHHHHHHENLYFQGGEFSFRFGQHLIKPSVVFLKTELSFALVNRKPVVPGHV
LVCPLRPVERFHDLRPDEVADLFQTTQRVGTVVEKHFHGTSLTFSMQDGPEAGQTVKHVHVHVL
PRKAGDFHRNDSIYEELQKHDKEDFPASWRSEEEMAAEAAALRVYFQ