

FH/Fumarate Hydratase Protein, Human, Recombinant (His)

General Information

Synonyms:	fumarate hydratase;MCL;LRCC;MCUL1;FMRD;HLRCC
Protein Construction:	A DNA sequence encoding the mature form of human FH (P07954-1) (Ala 45-Lys 510) was fused with a polyhistidine tag at the C-terminus and an initial Met at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	E. coli
Accession:	P07954-1
Molecular Weight:	52 kDa (predicted); 45 kDa (reducing conditions)

QC Testing

Biological Activity:	Measured by its ability to transform 1umole of Fumarate to L-malate per minute at pH 7.5 at 37°C. Specific activity is > 25 unit/mg.
Purity:	> 85 % as determined by SDS-PAGE
Endotoxin:	Please contact us for more information.
Formulation:	Lyophilized from a solution filtered through a 0.22 µm filter, containing 10 mM Tris, 5 mM EDTA, 1 mM DTT, pH 7.5. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Fumarate Hydratase (FH) is an enzymatic component of the tricarboxylic acid (TCA) cycle, or Krebs cycle, and catalyzes the formation of L-malate from fumarate. It exists in both a cytosolic form and an N-terminal extended form, differing only in the translation start site used. The N-terminal extended form is targeted to the mitochondrion, where the removal of the extension generates the same form as in the cytoplasm. Fumarate

Hydratase is similar to some thermostable class II fumarases and functions as a homotetramer. Mutations in this gene can cause fumarase deficiency and lead to progressive encephalopathy. Individuals with hemizygous germline fumarate hydratase (FH) mutations are predisposed to renal cancer. These tumors predominantly exhibit functional inactivation of the remaining wild-type allele, implicating FH inactivation as a tumor-promoting event.

Reference

King A, et al. (2005) Succinate dehydrogenase and fumarate hydratase: linking mitochondrial dysfunction and cancer. *Oncogene*. 25(34): 4675-82.

Alam NA, et al. (2003) Genetic and functional analyses of FH mutations in multiple cutaneous and uterine leiomyomatosis, hereditary leiomyomatosis and renal cancer, and fumarate hydratase deficiency. *Hum Mol Genet*. 12(11): 1241-52.

Pollard PJ, et al. (2003) The TCA cycle and tumorigenesis: the examples of fumarate hydratase and succinate dehydrogenase. *Ann Med*. 35(8): 632-9.

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