Data Sheet (Cat.No.TMPY-01769)

TargetMol

4EBP1 Protein, Human, Recombinant (His)

General Information

Synonyms:	4E-BP1;eukaryotic translation initiation factor 4E binding protein 1;4EBP1;PHAS-I;BP-1
Protein Construction:	A DNA sequence encoding the human 4EBP1 (NP_004086.1) (Ser 2-Ile 118) with a N-terminal polyhistidine tag was expressed. Predicted N terminal: Met
Species:	Human
Expression Host:	E. coli
Accession:	Q13541
Molecular Weight:	13.4 kDa (predicted); 19 kDa (reducing conditions)

QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 90 % 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 20 mM Tris, 500 mM NaCl, 10% glycerol. 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

The translational suppressor eIF4E binding protein-1, 4E-BP1 functions as a key regulator in cellular growth, differentiation, apoptosis and survival. The Eif4ebp1 gene, encoding 4E-BP1, is a direct target of a transcription factor activating transcription factor-4 (ATF4), a master regulator of gene expression in stress responses. 4E-BP1 is characterized by its capacity to bind specifically to eIF4E and inhibit its interaction with eIF4G. Phosphorylation of 4E-BP1 regulates eIF4E availability, and therefore, cap-dependent translation, in cell stress. Binding of eIF4E to

eIF4G is inhibited in a competitive manner by 4E-BP1. Phosphorylation of 4E-BP1 decreases the affinity of this protein for eIF4E, thus favouring the binding of eIF4G and enhancing translation. 4E-BP1 is important for beta-cell survival under endoplasmic reticulum (ER) stress. 4E-BP1 mediates the regulation of protein translation by hormones, growth factors and other stimuli that signal through the MAP kinase and mTORC1 pathways. Recently, 4E-BP1 was found to be a key factor, which converges several oncogenic signals, phosphorylates the molecules, and drives the downstream proliferative signals. Recent studies showed that high expression of phosphorylated 4E-BP-1 (p-4E-BP1) is associated with poor prognosis, tumor progression, or nodal metastasis in different human cancers.

Reference

Azar R, et al. (2008) Phosphatidylinositol 3-kinase-dependent transcriptional silencing of the translational repressor 4E-BPCell Mol Life Sci. 65(19): 3110-7.

Tominaga R, et al. (2010) The JNK pathway modulates expression and phosphorylation of 4E-BP1 in MIN6 pancreatic beta-cells under oxidative stress conditions. Cell Biochem Funct. 28(5): 387-93.

Ayuso MI, et al. (2010) New hierarchical phosphorylation pathway of the translational repressor eIF4E-binding protein 1 (4E-BP1) in ischemia-reperfusion stress. J Biol Chem. 285(45): 34355-63.