Data Sheet (Cat.No.TMPY-02519)

TargetMol

BLVRB Protein, Human, Recombinant (His)

General Information

Synonyms:	HEL-S-10;biliverdin reductase B;FLR;BVRB;SDR43U1
Protein Construction:	A DNA sequence encoding the human BLVRB (P30043) (Ala 2-Gln 206) was expressed, with a polyhistide tag at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	E. coli
Accession:	P30043
Molecular Weight:	23.5 kDa (predicted)

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:	> 97 % 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 PBS, 0.02% Brij35, 10% glycerol, 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

Biliverdin reductase (hBVR) is a serine/threonine kinase that catalyzes reduction of the heme oxygenase (HO) activity product, biliverdin, to bilirubin. BVR consists of an N-terminal dinucleotide-binding domain (Rossmann-fold) and a C-terminal domain that contains a six-stranded β-sheet that is flanked on one face by several α-helices. The C-terminal and N-terminal domains interact extensively, forming the active site cleft at their interface. Biliverdin reductase (BVR) catalyzes the last step in heme degradation by reducing the γ-methene bridge of the

open tetrapyrrole, biliverdin IXα, to bilirubin with the concomitant oxidation of a β-nicotinamide adenine dinucleotide (NADH) or β-nicotinamide adenine dinucleotide phosphate (NADPH) cofactor. It is now recognized that human BVR (hBVR) is a dual-specificity kinase (Ser / Thr and Tyr) upstream activator of the insulin/insulin growth factor-1 (IGF-1) and mitogen-activated protein kinase (MAPK) signaling pathways. Human BVR (hBVR) is essential for MAPK-extracellular signal-regulated kinase (ERK)1/2 (MEK)-eukaryotic-like protein kinase (Elk) signaling and has been identified as the cytoplasm-nuclear heme transporter of ERK1/2 and hematin, the key components of stress-responsive gene expression.

Reference

Kapitulnik J, et al. (2009) Pleiotropic functions of biliverdin reductase: cellular signaling and generation of cytoprotective and cytotoxic bilirubin. Trends in Pharmacological Sciences. 30(3): 129-37.

Ahmad Z, et al. (2002) Human Biliverdin Reductase Is a Leucine Zipper-like DNA-binding Protein and Functions in Transcriptional Activation of Heme Oxygenase-1 by Oxidative Stress. The Journal of Biological Chemistry. 277: 9226-32.

Whitby FG, et al. (2002) Crystal Structure of a Biliverdin IX Reductase Enzyme-Cofactor Complex. Journal of Molecular Biology. 319(5): 1199-210.

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