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PRODUCT INFORMATION

Biliverdin Reductase B (human, recombinant)

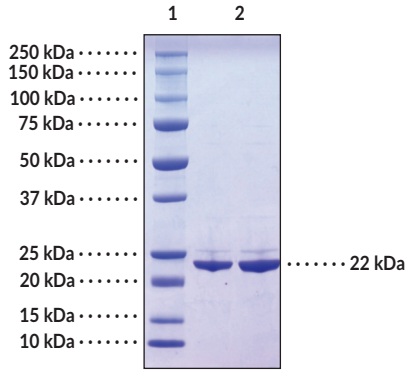
Item No. 40477

Overview and Properties

Synonyms:	Biliverdin-IX β-reductase, BLVRB, BVR-B, FLR, SCAN, S-nitroso-CoA-assisted Nitrosyltransferase
Source:	Active recombinant human biliverdin reductase B expressed in *E. coli*
Amino Acids:	1-206 (full length)
Uniprot No.:	P30043
Molecular Weight:	22 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	50 mM Tris HCl, pH 8.0, with 150 mM sodium chloride, and 10% glycerol
Protein Concentration:	***batch specific*** mg/ml
Activity:	***batch specific*** U/ml
Specific Activity:	***batch specific*** U/mg
Unit Definition:	One unit is defined as the amount of enzyme required to produce 1 pmol of NADP per minute at 25°C in 100 mM sodium phosphate, pH 5.0, with 200 µM of flavin mononucleotide (FMN; Item No. 18167).

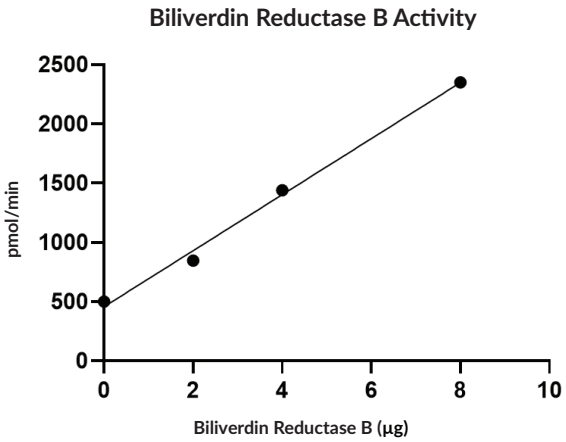
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: 2 µg
Lane 3: 4 µg

SDS-PAGE Analysis of Biliverdin Reductase B.



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PRODUCT INFORMATION

Description

Biliverdin reductase B, also known as S-nitroso-CoA-assisted nitrosyltransferase (SCAN), is an NADPH-dependent reductase and S-nitroso-CoA-dependent nitrosyltransferase encoded by *BLVRB* in humans that has roles in heme metabolism and insulin signaling.[1,2] It is a monomeric enzyme composed of a dinucleotide-binding domain that binds both NADPH and a substrate.[1] It is expressed in the liver and in erythrocytes and localizes to the cytoplasm.[2,3] Biliverdin reductase B uses NADPH as an electron donor to reduce biliverdin-IXβ to bilirubin in the last step of heme degradation during fetal development.[1,4] It can also reduce biliverdin-IXγ and biliverdin-IXδ, but not biliverdin-IXα, which is the predominant isoform in adults, as well as flavins, such as flavin mononucleotide (FMN), and ferric iron. Using S-nitroso-CoA (SNO-CoA) as a cofactor, biliverdin reductase B transfers SNO to cysteine residues in target proteins, such as the insulin receptor (InsR) and insulin receptor substrate 1 (IRS-1), which reduces insulin signaling.[2] Human skeletal muscle, visceral adipose, and subcutaneous adipose levels of biliverdin reductase B are positively associated with increased SNO-InsRβ levels in these tissues and with body mass index (BMI). Intratumoral levels of biliverdin reductase B are increased in comparison with levels in non-cancerous tissue in patients with esophageal carcinoma, endometrial carcinoma, or pancreatic cancer, among other cancers.[5] A serine-to-leucine substitution at residue 111 of biliverdin reductase B inhibits its activity for both biliverdins and flavins and is a risk factor for thrombocytosis in humans.[6] Cayman's Biliverdin Reductase B (human, recombinant) protein can be used for ELISA, enzyme activity assay, and Western blot applications.

References

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2. Zhou, H.-L., Grimmett, Z.W., Venetos, N.M., *et al.* An enzyme that selectively S-nitrosylates proteins to regulate insulin signaling. *Cell* **186**, 5812-5825 (2023).
3. Chikuba, K., Yubisui, T., Shirabe, K., *et al.* Cloning and nucleotide sequence of a cDNA of the human erythrocyte NADPH-flavin reductase. *Biochem. Biophys. Res. Commun.* **198(3)**, 1170-1176 (1994).
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6. Wu, S., Li, Z., Gnatenko, D.V., *et al.* BLVRB redox mutation defines heme degradation in a metabolic pathway of enhanced thrombopoiesis in humans. *Blood* **128(5)**, 699-709 (2016).

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