

PRODUCT INFORMATION



Biliverdin Reductase B (human, recombinant)

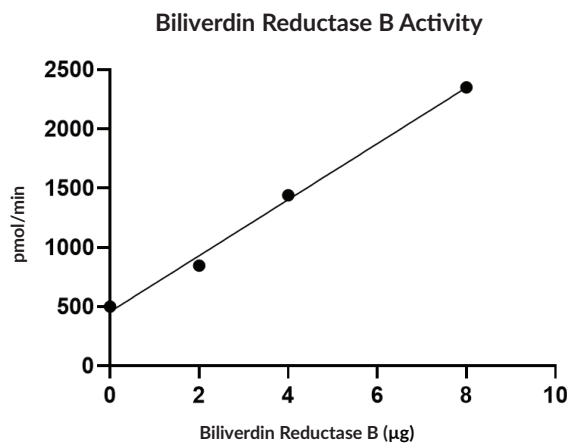
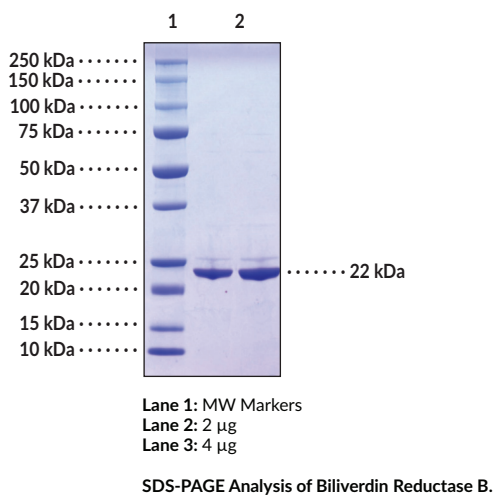
Item No. 40477

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 <i>E. coli</i>
Amino Acids:	1-206 (full length)
Uniprot No.:	P30043
Molecular Weight:	22 kDa
Storage:	-80°C (as supplied)
Stability:	≥ 1 year
Purity:	$\geq 90\%$ estimated by SDS-PAGE
Supplied in:	50 mM Tris HCl, pH 8.0, with 150 mM sodium chloride, and 10% glycerol
Protein Concentration:	<i>batch specific</i> mg/ml
Activity:	<i>batch specific</i> U/ml
Specific Activity:	<i>batch specific</i> U/mg
Unit Definition:	One unit is defined as the amount of enzyme required to produce 1 nmol of NADP per minute at 25°C in 100 mM sodium phosphate, pH 5.0, with 200 μ M of flavin mononucleotide (FMN; Item No. 18167).

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

Images



WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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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-IX β to bilirubin in the last step of heme degradation during fetal development.^{1,4} It can also reduce biliverdin-IX γ and biliverdin-IX δ , but not biliverdin-IX α , 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-InsR β 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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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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5. Bahou, W.F., Marchenko, N., and Nesbitt, N.M. Metabolic functions of biliverdin IX β reductase in redox-regulated hematopoietic cell fate. *Antioxidants (Basel)* **12**(5), 1058 (2023).
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).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM