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AR09146PU-L Recombinant Human Aldose reductase / AKR1B1 (aa 1-316)

Alternate names: Aldose reductase

Quantity: 0.5 mg

Concentration: 1.0 mg/ml (determined by Bradford assay)

Background: Aldose reductase (AKR1B1) is a member of the aldo-keto reductase (AKR) superfamily and catalyzes the NADPH-dependent reduction of a wide variety of carbonyl-containing compounds to their corresponding alcohols. This protein is implicated in the development of diabetic complications by catalyzing the reduction of glucose to sorbitol.

Uniprot ID: P15121

NCBI: NP_001619

GeneID: 231

Species: Human

Source: E. coli

Format:
State: Liquid purified protein
Purity: >95% by SDS - PAGE
Buffer System: 20 mM Tris-HCl buffer (pH 8.0) containing 1 mM DTT, 10% glycerol
Endotoxin Level: < 1.0 EU per 1 µg of protein (determined by LAL method).

Description: Recombinant Aldose reductase (AKR1B) protein was expressed in E.coli and purified by using conventional chromatography techniques.

AA Sequence:
MASRLLLNNG AKMPILGLGT WKSPPGQVTE AVKVAIDVGY RHIDCAHVYQ NENEVGVAIQ
EKLREQVVKR EELFIVSKLW CTYHEKGLVK GACQKTLSDL KLDYLDLYLI HWPTGFKPGK
EFFPLDESGN VVPSDTNILD TWAAMEELVD EGLVKAIGIS NFNHLQVEMI LNKPGLKYKP
AVNQIECHPY LTQEKLIQYC QSKGIVVTAY SPLGSPDRPW AKPEDPSLLE DPRIKAIAAK
HNKTTAQVLI RFPMQRNLVV IPKSVTPERI AENFKVFDFE LSSQDMTTLL SYNRNWRVCA
LLSCTSHKDY PFHEEF

Specific Activity: Approximately 0.2-0.9 units/mg.
Enzymatic activity was confirmed by measuring the amount of enzyme catalyzing the oxidation of 1 micromole NADPH/min at 25°C. Specific activity was expressed as units/mg protein.

Activity Assay
1. Prepare a 750µl reaction mix into a suitable container:
The final concentrations are 0.1M sodium phosphate (pH7.0), 10mM DL-glyceraldehyde, 0.3mM NADPH.
2. Add 50µl of recombinant AKR1B1 solution with various concentrations (2.5µg, 5µg, 10µg) in 750µl reaction buffer.
3. Mix by inversion and Incubate at 25C for 2.5 minutes.
4. Add 200µl of 50 mM DL-glyceraldehyde as a substrate and immediately mix by inversion.
5. Record the increase at A340nm for 3 minutes.

Molecular weight: 35.8 kDa (316 aa), confirmed by MALDI-TOF

Storage:

Store undiluted at 2-8°C for one month or (in aliquots) at -20°C to -70°C for longer.
Avoid repeated freezing and thawing.
Shelf life: one year from despatch.

Product Citations:

Purchased from Acris:

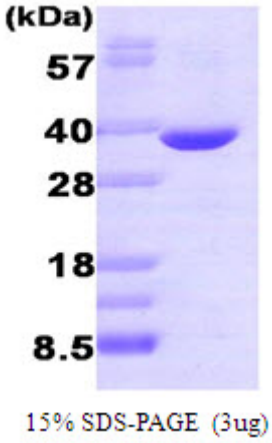
1. Díez-Dacal B, Sánchez-Gómez FJ, Sánchez-Murcia PA, Milackova I, Zimmerman T, Ballekova J, et al. Molecular Interactions and Implications of Aldose Reductase Inhibition by PGA1 and Clinically Used Prostaglandins. Mol Pharmacol. 2016 Jan;89(1):42-52. doi: 10.1124/mol.115.100693. Epub 2015 Oct 20. PubMed PMID: 26487510.

General Readings:

1. Ruiz FX, Gallego O, Ardèvol A, Moro A, Domínguez M, Alvarez S, et al. Aldo-keto reductases from the AKR1B subfamily: retinoid specificity and control of cellular retinoic acid levels. Chem Biol Interact. 2009 Mar 16;178(1-3):171-7. doi: 10.1016/j.cbi.2008.10.027. Epub 2008 Oct 25. PubMed PMID: 19014918.
2. Donaghue KC, Margan SH, Chan AK, Holloway B, Silink M, Rangel T, et al. The association of aldose reductase gene (AKR1B1) polymorphisms with diabetic neuropathy in adolescents. Diabet Med. 2005 Oct;22(10):1315-20. PubMed PMID: 16176189.

Pictures:

Recombinant human Aldose reductase, aa 1-316: 15% SDS-PAGE (3 µg).



15% SDS-PAGE (3ug)