

Recombinant IDH1 (R100Q) protein

Catalog No: 31612, 31712**Lot No:** 06217001**Expressed In:** *E. coli***Quantity:** 100, 1000 µg**Concentration:** 1.2 µg/µl**Source:** Human

Buffer Contents: Recombinant IDH1 (R100Q) protein is supplied at a concentration of 1.2 µg/µl in 25 mM Tris pH 8.0, 300 mM NaCl, 5% glycerol.

Background: IDH1 (Isocitrate Dehydrogenase (NADP(+)) 1, Cytosolic, also known as HEL-216, HEL-S-26, IDCD, IDH, IDP, IDPC, PICD) is a member of isocitrate dehydrogenases, which catalyze the oxidative decarboxylation of isocitrate to 2-oxoglutarate. IDH1 is the NADP(+)-dependent isocitrate dehydrogenase found in the cytoplasm and peroxisomes. It contains the PTS-1 peroxisomal targeting signal sequence. The presence of this enzyme in peroxisomes suggests roles in the regeneration of NADPH for intraperoxisomal reductions, such as the conversion of 2, 4-dienoyl-CoAs to 3-enoyl-CoAs, as well as in peroxisomal reactions that consume 2-oxoglutarate, namely the alpha-hydroxylation of phytanic acid. The cytoplasmic enzyme serves a significant role in cytoplasmic NADPH production. Mutations in human cytosolic isocitrate dehydrogenase I (IDH1) occur somatically in >70% of grade II-III gliomas and secondary glioblastomas, and in 8.5% of acute myeloid leukemias (AML). Mutations have also been reported in cancers of the colon and prostate. To date, mutations in at least four active site arginine residues IDH1 R100, IDH1 R132, IDH2 R140, and IDH2 R172 have been shown to result in the neomorphic production of R(-)-2-hydroxyglutarate (2HG), although these mutants lack the wild-type enzyme's ability to convert isocitrate to α-ketoglutarate (α-KG, 2OG). Among of them, IDH1 R100A is affected in adult glioma.

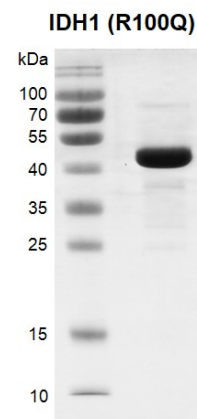
Protein Details: Recombinant IDH1 (R100Q) protein was expressed in *E. coli* cells as the full length protein (accession number AAH93020.1) with a point mutation Arg100Gln and a C-terminal 6×His tag. The molecular weight of the protein is 47.7 kDa.

Application Notes: This protein is useful for the study of enzyme kinetics, screening inhibitors, and selectivity profiling.

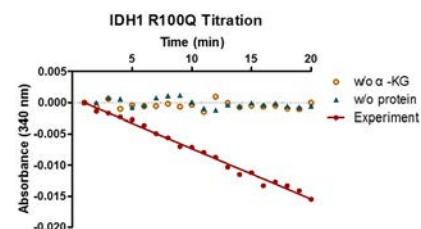
Activity Assay Conditions: 10 µM NADPH and 1 µM α-KG were incubated with 100 nM IDH1 (R100Q) protein in 200 µl reaction system containing 50 mM Tris-HCl pH 7.4, 150 mM NaCl, 10 mM MgCl₂ and 0.03% BSA. All the operations and reactions were performed at room temperature. Depletion of NADPH was monitored continuously at Abs 340 nm for 20 min.

Storage and Guarantee: Recombinant proteins in solution are temperature sensitive and must be stored at -80°C to prevent degradation. Avoid repeated freeze/thaw cycles and keep on ice when not in storage. This product is guaranteed for 6 months from date of receipt.

This product is for research use only and is not for use in diagnostic procedures.



Recombinant IDH1 (R100Q) protein gel
12.5% SDS-PAGE Coomassie staining
MW: 47.7 kDa
Purity: > 90%



Recombinant IDH1 (R100Q) protein activity assay

10 µM NADPH and 1 µM α-KG were incubated with 100 nM IDH1 (R100Q) protein in 200 µl reaction system containing 50 mM Tris-HCl pH 7.4, 150 mM NaCl, 10 mM MgCl₂ and 0.03% BSA (at room temperature). Depletion of NADPH was monitored continuously at Abs 340 nm for 20 min.