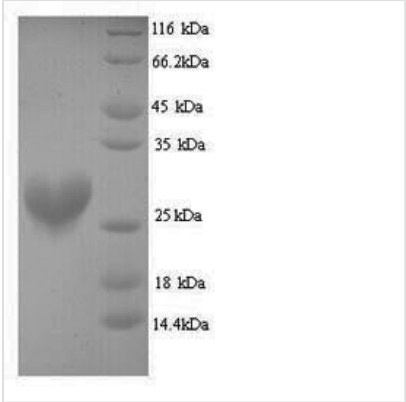
Recombinant Mouse Ribosyldihydronicotinamide dehydrogenase [quinone] (Nqo2)

Product Code	CSB-YP881303MO
Relevance	The enzyme apparently serves as a quinone reductase in connection with conjugation reactions of hydroquinones involved in detoxification pathways as well as in biosynthetic processes such as the vitamin K-dependent gamma-carboxylation of glutamate residues in prothrombin synthesis.
Abbreviation	Nqo2
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	Q9JI75
Alias	NRH dehydrogenase [quinone] 2NRH:quinone oxidoreductase 2Quinone reductase 2 ;QR2
Product Type	Recombinant Protein
Immunogen Species	Mus musculus (Mouse)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MAGKKVLIVYAHQEPKSFNGSLKKVAVEELSKQGCTVTVSDLYSMNFEPRATR NDITGAPSNPDVFSYGIETHEAYKKKALTSDIFEEQRKVQEADLVIFQFPLYWF SVPAILKGWMDRVLCRGFAFDIPGFYDSGFLKGKLALLSLTTGGTAEMYTKDG VSGDFRYFLWPLQHGTLHFCGFKVLAPQISFGLDVSSEEERKVMLASWAQRL KSIWKEEPIHCTPPWYFQE
Lead Time	3-7 business days
Research Area	Others
Source	Yeast
Gene Names	Nqo2
Protein Names	Recommended name: Ribosyldihydronicotinamide dehydrogenase [quinone] EC= 1.10.99.2 Alternative name(s): NRH dehydrogenase [quinone] 2 NRH:quinone oxidoreductase 2 Quinone reductase 2 Short name= QR2
Expression Region	1-231aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	28.2kDa
Protein Description	Full Length

Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

The production of recombinant mouse Ribosyldihydronicotinamide dehydrogenase [quinone] (Nqo2) in yeast involves several steps. First, the gene encoding the full-length Nqo2 protein (1-231aa) is cloned into an expression vector with an N-terminal 6xHis-tag gene and transformed into yeast cells. These cells are cultured under conditions that promote protein expression. After reaching sufficient growth, the cells are lysed to release the recombinant Nqo2 protein. Purification of the harvested protein is done using affinity chromatography. Protein purity is assessed using SDS-PAGE, exceeding 90%.

Mouse NQO2 is an enzyme highly expressed in mouse oocytes during meiotic progression and is involved in protein transport, gene expression regulation, and meiotic maturation [1][2]. NQO2 is also detected in mouse hepatocytes and participates in the reduction of short-chain quinones and electron transfer within the mitochondrial respiratory chain [3].

Studies have indicated that NQO2 expression and activity can affect memory impairment in mouse models of Alzheimer's disease, with inhibitors of NQO2 showing the potential to improve cognition and reduce pathology in the brains of experimental mice [4]. Furthermore, NQO2 regulates reactive oxygen species' effects on mouse oocyte meiotic maturation and embryo development, highlighting its importance in reproductive processes [2].

References:
[1] E. Janda, F. Nepveu, B. Calamini, G. Ferry, & J. Boutin, Molecular pharmacology of nrh:quinone oxidoreductase 2: a detoxifying enzyme acting as an undercover toxifying enzyme, Molecular Pharmacology, vol. 98, no. 5, p. 620-633, 2020. https://doi.org/10.1124/molpharm.120.000105
[2] D. Chen, X. Li, X. Liu, X. Liu, X. Jiang, J. Duet al., Nqo2 inhibition relieves reactive oxygen species effects on mouse oocyte meiotic maturation and embryo development†, Biology of Reproduction, vol. 97, no. 4, p. 598-611, 2017. https://doi.org/10.1093/biolre/iox098
[3] R. Haefeli, M. Erb, A. Gemperli, D. Robay, I. Fruh, C. Anklinet al., Nqo1-dependent redox cycling of idebenone: effects on cellular redox potential and energy levels, Plos One, vol. 6, no. 3, p. e17963, 2011. https://doi.org/10.1371/journal.pone.0017963
[4] E. Janda, Polymorphisms and pharmacogenomics of nqo2: the past and the future, Genes, vol. 15, no. 1, p. 87, 2024.

https://doi.org/10.3390/genes15010087

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.