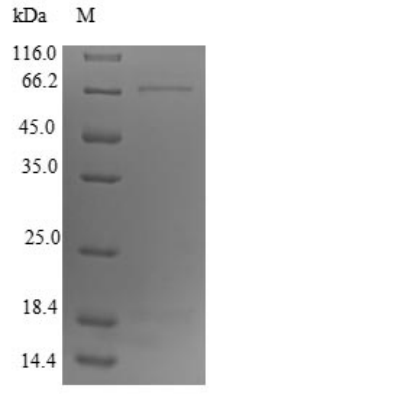
Recombinant Mouse L-dopachrome tautomerase (Dct), partial

Product Code	CSB-EP006562MO1
Relevance	Catalyzes the conversion of L-dopachrome into 5,6-dihydroxyindole-2-carboxylic acid (DHICA) (PubMed:1537333). Involved in regulating eumelanin and phaeomelanin levels.
Abbreviation	Recombinant Mouse Dct protein, partial
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.	P29812
Alias	DOPAchrome conversion factor1 DOPAchrome isomerase1 DOPAchrome oxidoreductase1 L-dopachrome Delta-isomerase SLATY locus protein Tyrosinase-related protein 2
Product Type	Recombinant Protein
Immunogen Species	Mus musculus (Mouse)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	QFPRVCMTLDGVLNKECCPPLGPEATNICGFLEGRGQCAEVQTDTRPWSGP YILRNQDDREQWPRKFFNRTCKCTGNFAGYNCGGCKFGWTGPDCNRKKPAI LRRNIHSLTAQEREQFLGALDLAKKSIHPDYVITTQHWLGLLGPNGTQPQIANC SVYDFFVWLHYYSVRDTLLGPGRPYKAIDFSHQGPAFVTWHRYHLLWLEREL QRLTGNESFALPYWNFATGKNECDVCTDELLGAARQDDPTLISRNSRFSTWEI VCDSLDDYNRRVTLCNGTYEGLLRRNKVGRNNEKLPTLKNVQDCLSLQKFDS PPFFQNSTFSFRNALEGFDKADGTLDSQVMNLHNLAHSFLNGTNALPHSAAN DPVFVVLHSFTDAIFDEWLKRNNPSTDAWPQELAPIGHNRMYNMVPFFPPVT NEELFLTAEQLGYNYAVDLSEEEAPVWSTTLS
Research Area	Cell Biology
Source	E.coli
Target Names	Dct
Protein Names	Recommended name: L-dopachrome tautomerase Short name= DCT Short name= DT EC= 5.3.3.12Alternative name(s): L-dopachrome Delta-isomerase SLATY locus protein Tyrosinase-related protein 2 Short name= TRP-2 Short name=
Expression Region	24-472aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-SUMO-tagged

Mol. Weight	69.7kDa
Protein Length	Partial

Image



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

Description

Dopachrome tautomerase (Dct), also known as tyrosinase-related protein-2 (TRP-2), is a crucial enzyme in the biosynthetic pathway of melanin. It catalyzes the conversion of dopachrome to 5,6-dihydroxyindole-2-carboxylic acid (DHICA), a precursor of eumelanins [1]. Dct plays a significant role in melanin synthesis by converting dopachrome to DHICA, contributing to the production of eumelanins [2]. Encoded by the Dct gene, Dct is responsible for the non-decarboxylative tautomerization of L-DOPAchrome to DHICA in the melanin biosynthetic pathway [3].

Beyond melanin synthesis, studies have demonstrated that Dct protects melanocytic cells from damage caused by ultraviolet radiation and reactive oxygen species, thereby enhancing cell viability [4]. Moreover, Dct has been implicated in melanoma cell phenotype-specific interactions, potentially influencing tumor progression [5]. Additionally, Dct has been associated with resistance to certain chemotherapeutic agents in melanoma, underscoring its role in therapeutic implications [6].

The regulation of Dct expression is dynamic and involves factors such as MITF, ER-α, and chromatin remodelers, impacting cell proliferation and senescence in melanocytes [2]. Furthermore, Dct has been linked to retinogenesis misregulation in albinism, highlighting its importance in melanosome function and related disorders [7][8]. The interaction of Dct with caveolin-1 in melanoma cells has been identified as phenotype-specific and potentially involved in tumor progression [5].

References:

[1] G. Costin, J. Valencia, K. Wakamatsu, S. Ito, F. Solano, A. Milacet al., "Mutations in dopachrome tautomerase (dct) affect eumelanin/pheomelanin synthesis, but do not affect intracellular trafficking of the mutant protein", Biochemical Journal, vol. 391, no. 2, p. 249-259, 2005. https://doi.org/10.1042/bj20042070

[2] D. Schwahn, N. Timchenko, S. Shibahara, & E. Medrano, "Dynamic regulation of the human dopachrome tautomerase promoter by mitf, er?α and

chromatin remodelers during proliferation and senescence of human melanocytes", Pigment Cell Research, vol. 18, no. 3, p. 203-213, 2005. https://doi.org/10.1111/j.1600-0749.2005.00229.x
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[4] S. Ainger, X. Yong, S. Wong, D. Škalamera, B. Gabrielli, J. Leonardet al., "dct protects human melanocytic cells from uvr and ros damage and increases cell viability", Experimental Dermatology, vol. 23, no. 12, p. 916-921, 2014. https://doi.org/10.1111/exd.12574
[5] I. Popa, A. Milac, L. Sima, P. Alexandru, F. Pastrama, C. Munteanuet al., "Cross-talk between dopachrome tautomerase and caveolin-1 is melanoma cell phenotype-specific and potentially involved in tumor progression", Journal of Biological Chemistry, vol. 291, no. 24, p. 12481-12500, 2016. https://doi.org/10.1074/jbc.m116.714733
[6] W. Chu, B. Pak, M. Bani, M. Kapoor, S. Lu, A. Tamiret al., "Tyrosinase-related protein 2 as a mediator of melanoma specific resistance to cis-diamminedichloroplatinum(ii): therapeutic implications", Oncogene, vol. 19, no. 3, p. 395-402, 2000. https://doi.org/10.1038/sj.onc.1203315
[7] A. Tingaud-Sequeira, E. Mercier, V. Michaud, B. Pinson, I. Gazova, E. Gontieret al., "The dct-/- mouse model to unravel retinogenesis misregulation in patients with albinism",, 2022. https://doi.org/10.1101/2022.05.25.493436
[8] A. Tingaud-Sequeira, E. Mercier, V. Michaud, B. Pinson, I. Gazova, E. Gontieret al., "The dct–/– mouse model to unravel retinogenesis misregulation in patients with albinism", Genes, vol. 13, no. 7, p. 1164, 2022. https://doi.org/10.3390/genes13071164

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.

Shelf Life

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.