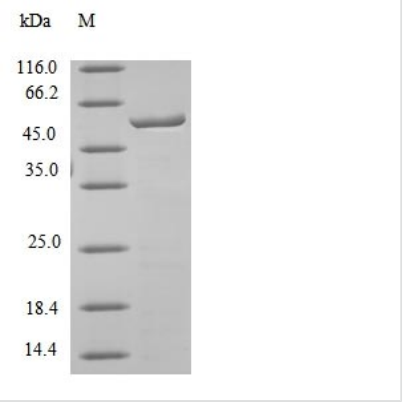
Recombinant Mouse Carboxylesterase 1C (Ces1c), partial

Product Code	CSB-EP338557MOe1
Relevance	Involved in the detoxification of xenobiotics and in the activation of ester and amide prodrugs. Involved in the extracellular metabolism of lung surfactant.
Abbreviation	Recombinant Mouse Ces1c 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.	P23953
Alias	Liver carboxylesterase N Lung surfactant convertase PES-N
Product Type	Recombinant Protein
Immunogen Species	Mus musculus (Mouse)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	HSLLPPVVDTTQGKVLGKYISLEGFEQPVAVFLGVPFAKPPLGSLRFAPPQPAE PWSFVKNATSYPPMCSQDAGWAKILSDMFSTEKEILPLKISEDCLYLNIYSPAD LTKSSQLPVMVWIHGGGLVIGGASPYNGLALSAHENVVVVTIQYRLGIWGLFST GDEHSPGNWAHLDQLAALRWVQDNIANFGGNPDSVTIFGESSGGISVSVLVL SPLGKDLFHRAISESGVVINTNVGKKNIQAVNEIIATLSQCNDTSSAAMVQCLR QKTESELLEISGKLVQYNISLSTMIDGVVLPKAPEEILAEKSFNTVPYIVGFNKQE FGWIIPMMLQNLLPEGKMNEETASLLLRRFHSELNISESMIPAVIEQYLRGVDD PAKKSELILDMFGDIFFGIPAVLLSRSLRDAGVSTYMYEFRYRPSFVSDKRPQT VEGDHGDEIFFVFGAPLLKEGASEEETNLSKMVMKFWANFARNGNPNGEGLP HWPEYDEQEGYLQIGATTQQAQRLKAEEVAFWTELLAKNPPETDPTEH
Research Area	others
Source	E.coli
Target Names	Ces1c
Expression Region	19-550aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	Tag-Free
Mol. Weight	58.6kDa
Protein Length	Partial
Image	



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

Description

The process of producing recombinant mouse Carboxylesterase 1C (Ces1c) involves several key steps. First, the target gene coding for the 19-550aa of the mouse Ces1c is obtained. This gene is cloned into an expression vector, designed to carry the gene into a host cell. The vector is transformed into E. coli cells, where the recombinant protein is expressed. The protein is collected from the cell lysate and purified using affinity chromatography. Finally, the recombinant Ces1c protein's purity is measured by SDS-PAGE, reaching up to 90%.

Mouse Ces1c is an enzyme found in mice that plays a crucial role in the metabolism and stability of various compounds, particularly linkers in drug delivery systems. This enzyme, absent in humans, monkeys, and dogs, has been identified as responsible for the rapid degradation of certain linkers in mouse plasma, impacting the pharmacokinetics of drugs [1][2]. Studies have highlighted the significance of Ces1c in cleaving linkers such as valine-citrulline-paminocarbamate (VC-PABC) in mouse plasma, leading to linker instability [3][4]. Ces1c has been associated with the hydrolysis of linkers like Val-containing peptide linkers in mouse plasma, affecting the stability of drug conjugates [5][6]. Furthermore, Ces1c has been linked to the instability of specific linkers in mouse plasma, complicating the interpretation of pharmacokinetic and pharmacodynamic studies in mice [7]. The presence of Ces1c in mice has been shown to influence the stability and efficacy of drug delivery systems, particularly antibody-drug conjugates (ADCs), by cleaving susceptible linkers like Val-Cit in mouse plasma [8][9].

References:
[1] W. Zhang, Pharmacokinetics of panobinostat: interspecies difference in metabolic stability, Journal of Pharmacology and Experimental Therapeutics, vol. 389, no. 1, p. 96-105, 2024. https://doi.org/10.1124/jpet.123.002051
[2] R. Ubink, E. Dirksen, M. Rouwette, E. Bos, I. Janssen, D. Egginget al., Unraveling the interaction between carboxylesterase 1c and the antibody–drug conjugate syd985: improved translational pk/pd by using ces1c knockout mice, Molecular Cancer Therapeutics, vol. 17, no. 11, p. 2389-2398, 2018. https://doi.org/10.1158/1535-7163.mct-18-0329
[3] M. Dorywalska, R. Dushin, L. Moine, S. Farias, D. Zhou, T. Navaratnamet al., Molecular basis of valine-citrulline-pabc linker instability in site-specific adcs and its mitigation by linker design, Molecular Cancer Therapeutics, vol. 15, no. 5, p.

958-970, 2016. https://doi.org/10.1158/1535-7163.mct-15-1004
[4] M. Dorywalska, Data from molecular basis of valine-citrulline-pabc linker instability in site-specific adcs and its mitigation by linker design,, 2023. https://doi.org/10.1158/1535-7163.c.6538915
[5] Z. Su, D. Xiao, F. Xie, L. Liu, Y. Wang, S. Fanet al., Antibody–drug conjugates: recent advances in linker chemistry, Acta Pharmaceutica Sinica B, vol. 11, no. 12, p. 3889-3907, 2021. https://doi.org/10.1016/j.apsb.2021.03.042
[6] A. Pal, W. Albusairi, F. Liu, M. Tuhin, M. Miller, D. Lianget al., Hydrophilic small molecules that harness transthyretin to enhance the safety and efficacy of targeted chemotherapeutic agents, Molecular Pharmaceutics, vol. 16, no. 7, p. 3237-3252, 2019. https://doi.org/10.1021/acs.molpharmaceut.9b00432
[7] N. Loos, Interplay of ritonavir-boosted oral cabazitaxel with the organic anion-transporting polypeptide (oatp) uptake transporters and carboxylesterase 1 in mice, Molecular Pharmaceutics, vol. 21, no. 4, p. 1952-1964, 2024. https://doi.org/10.1021/acs.molpharmaceut.3c01205
[8] S. Seaman, Z. Zhu, S. Saha, X. Zhang, M. Yang, M. Hiltonet al., Eradication of tumors through simultaneous ablation of cd276/b7-h3-positive tumor cells and tumor vasculature, Cancer Cell, vol. 31, no. 4, p. 501-515.e8, 2017. https://doi.org/10.1016/j.ccell.2017.03.005
[9] N. Ashman, J. Bargh, & D. Spring, Non-internalising antibody–drug conjugates, Chemical Society Reviews, vol. 51, no. 22, p. 9182-9202, 2022. https://doi.org/10.1039/d2cs00446a

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.