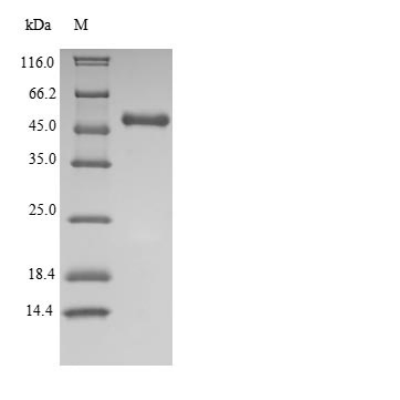
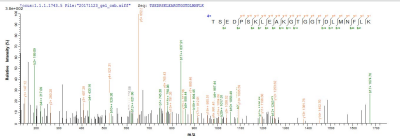
Recombinant Human Indoleamine 2,3-dioxygenase 1 (IDO1)

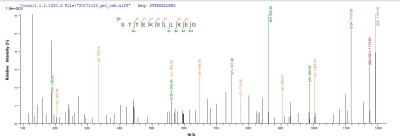
Product Code	CSB-EP010996HU
Relevance	Catalyzes the cleavage of the pyrrol ring of tryptophan and incorporates both atoms of a molecule of oxygen.
Abbreviation	Recombinant Human IDO1 protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and 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.	P14902
Alias	Indoleamine-pyrrole 2,3-dioxygenase
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MAHAMENSWTISKEYHIDEEVGFALPNPQENLPDFYNDWMFIAKHLPDLIESG QLRERVEKLNMLSIDHLTDHKSQRLARLVLGCITMAYVWGKGHGDVRKVLPR NIAVPYCQLSKKLELPPILVYADCVLANWKKKDPNKPLTYENMDVLFSFRDGD CSKGFFLVSLLVEIAAASAIKVIPTVFKAMQMQERDTLLKALLEIASCLEKALQVF HQIHDHVNPKAFFSVLRIYLSGWKGNPQLSDGLVYEGFWEDPKEFAGGSAGQ SSVFQCFDVLLGIQQTAGGGHAAQFLQDMRRYMPPAHRNFLCSLESNPSVRE FVLSKGDAGLREAYDACVKALVSLRSYHLQIVTKYILIPASQQPKENKTSEDPS KLEAKGTGGTDLMNFLKTVRSTTEKSLLKEG
Research Area	Cardiovascular
Source	E.coli
Target Names	IDO1
Expression Region	1-403aa
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	49.3kDa
Protein Length	Full Length
Image	



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



Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP010996HU could indicate that this peptide derived from E.coli-expressed Homo sapiens (Human) IDO1.



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Description

The generation of recombinant human IDO1 protein starts with cloning the IDO1 gene (1-403aa) with the N-terminal 6xHis-tag gene into an expression vector, followed by its introduction into E.coli cells. Once expressed, the protein is isolated and purified using affinity chromatography from the cell lysate. Following purification, SDS-PAGE is employed to determine the purity of the recombinant IDO1 protein, exceeding 90%. This ensures the protein's suitability for applications in fields like cardiovascular research.

Human IDO1 is a crucial enzyme involved in the catabolism of the essential amino acid tryptophan (Trp) through the kynurenine pathway. It catalyzes the oxidative cleavage of Trp to N-formyl kynurenine, which subsequently hydrolyzes to kynurenine (Kyn) [1][2]. This reaction represents the rate-limiting step in the kynurenine pathway, which is significant for various physiological processes, including immune regulation and metabolism [3][4]. IDO1 is primarily expressed in multiple tissues, including lymphoid organs and the placenta, and its activity is induced by pro-inflammatory cytokines such as interferon-gamma (IFN-γ) [5][6].

By degrading Trp, IDO1 creates a local environment unfavorable for T-cell proliferation and function, leading to immunosuppression [7][8], which is exploited by tumors to evade immune detection, as the depletion of Trp and the accumulation of Kyn can inhibit T-cell activity and promote tumor growth [1][9]. Furthermore, high levels of IDO1 expression have been associated with poor clinical outcomes in various cancers, indicating its potential as a therapeutic target [9][4].

References:
[1] P. Azimnasab-Sorkhabi, M. Soltani-Asl, T. Yoshinaga, M. Dagli, C. Massoco, & J. Kfoury. Indoleamine-2,3 dioxygenase: a fate-changer of the tumor microenvironment, Molecular Biology Reports, vol. 50, no. 7, p. 6133-6145, 2023. https://doi.org/10.1007/s11033-023-08469-3
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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.