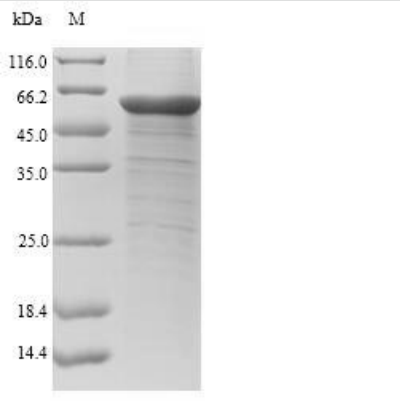
Recombinant Human Chitinase-3-like protein 1 (CHI3L1)

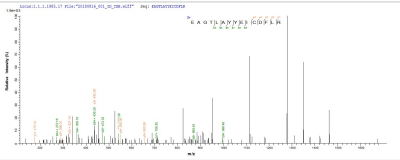
Product Code	CSB-EP005346HU
Relevance	Carbohydrate-binding lectin with a preference for chitin. Has no chitinase activity. May play a role in tissue remodeling and in the capacity of cells to respond to and cope with changes in their environment. Plays a role in T-helper cell type 2 (Th2) inflammatory response and IL-13-induced inflammation, regulating allergen sensitization, inflammatory cell apoptosis, dendritic cell accumulation and M2 macrophage differentiation. Facilitates invasion of pathogenic enteric bacteria into colonic mucosa and lymphoid organs. Mediates activation of AKT1 signaling pathway and subsequent IL8 production in colonic epithelial cells. Regulates antibacterial responses in lung by contributing to macrophage bacterial killing, controlling bacterial dissemination and augmenting host tolerance. Also regulates hyperoxia-induced injury, inflammation and epithelial apoptosis in lung.
Abbreviation	Recombinant Human CHI3L1 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.	P36222
Alias	39 kDa synovial protein Cartilage glycoprotein 39
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	YKLVCYYTSWSQYREGDGSCFPDALDRFLCTHIIYSFANISNDHIDTWEWNDV TLYGMLNTLKNRNPNLKTLLSVGGWNFGSQRFSKIASNTQSRRTFIKSVPPFL RTHGFDGLDLAWLYPGRRDKQHFTTLIKEMKAEFIKEAQPGKKQLLLSAALSA GKVTIDSSYDIAKISQHLDFISIMTYDFHGAWRGTTGHHSPLFRGQEDASPDRF SNTDYAVGYMLRLGAPASKLVMGIPTFGRSFTLASSETGVGAPISGPGIPGRFT KEAGTLAYYEICDFLRGATVHRILGQQVPYATKGNQWVGYDDQESVKSKVQY LKDRQLAGAMVWALDLDDFQGSFCGQDLRFPLTNAIKDALAAT
Research Area	Signal Transduction
Source	E.coli
Target Names	CHI3L1
Protein Names	Recommended name: Chitinase-3-like protein 1 Alternative name(s): 39 kDa synovial protein Cartilage glycoprotein 39 Short name= CGP-39 Short name= GP-39 Short name= hCGP-39 YKL-40
Expression Region	22-383aa

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 and C-terminal Myc-tagged
Mol. Weight	60.5kDa
Protein Length	Full Length of Mature Protein

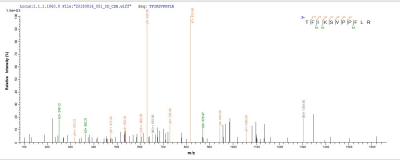
Image



(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-EP005346HU could indicate that this peptide derived from E.coli-expressed Homo sapiens (Human) CHI3L1.



Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP005346HU could indicate that this peptide derived from E.coli-expressed Homo sapiens (Human) CHI3L1.

Description

Producing recombinant human chitinase-3-like protein 1 (CHI3L1) starts with isolating the target gene corresponding to the 22-383aa of human CHI3L1. This gene is co-cloned into an expression vector with an N-terminal 10xHis-SUMO-tag and C-terminal Myc-tag gene and introduced into E.coli cells via transformation. The E.coli cells express the protein, which is subsequently harvested from the cell lysate. Purification of the recombinant CHI3L1 protein is commonly achieved using affinity chromatography. The SDS-PAGE is used to assess the purity of this protein, exceeding 90%.

CHI3L1, also known as YKL-40, is a glycoprotein that belongs to the glycoside hydrolase family 18 [1]. CHI3L1 is expressed in various cell types, including colonic epithelial cells and macrophages in inflamed colons, indicating its role in inflammatory conditions [2]. It regulates inflammatory responses, gene transcriptional signaling activation, and tissue repair and remodeling responses [1][3][4]. CHI3L1 has been implicated in conditions like osteosarcoma, neurologic disorders, liver fibrosis, and cardiovascular diseases [5][6][7].

Furthermore, CHI3L1's association with inflammation and tissue damage makes

it a potential biomarker in various diseases. Research indicates that fluctuations in serum CHI3L1 levels correspond with variations in liver fibrosis, highlighting its potential as a marker for tracking disease progression and therapeutic response. CHI3L1 deficiency has been linked to amelioration of liver fibrosis by promoting hepatic macrophage apoptosis [7].

References:

[1] T. Zhao, Z. Su, Y. Li, X. Zhang, & Y. Qin, Chitinase-3 like-protein-1 function and its role in diseases, Signal Transduction and Targeted Therapy, vol. 5, no. 1, 2020. https://doi.org/10.1038/s41392-020-00303-7
[2] T. Liu, J. Zhou, H. You, & J. Jia, Changes in serum chitinase 3?like 1 levels correlate with changes in liver fibrosis measured by two established quantitative methods in chronic hepatitis b patients following antiviral therapy, Hepatology Research, vol. 48, no. 3, 2017. https://doi.org/10.1111/hepr.12982
[3] M. Kawada, Y. Hachiya, A. Arihiro, & E. Mizoguchi, Role of mammalian chitinases in inflammatory conditions, The Keio Journal of Medicine, vol. 56, no. 1, p. 21-27, 2007. https://doi.org/10.2302/kjm.56.21
[4] D. Hrabar, Ykl-40 as a biomarker in various inflammatory diseases, Biochemia Medica, vol. 34, no. 1, 2023. https://doi.org/10.11613/bm.2024.0105027
[5] M. Higashiyama, K. Tomita, N. Sugihara, H. Nakashima, H. Furuhashi, M. Nishikawaet al., Chitinase 3?like 1 deficiency ameliorates liver fibrosis by promoting hepatic macrophage apoptosis, Hepatology Research, vol. 49, no. 11, p. 1316-1328, 2019. https://doi.org/10.1111/hepr.13396
[6] J. Yao, J. Xie, H. Wang, G. Vulugundam, H. Wang, & J. Xiao, Chitinase 3-like 1: a specifical regulator of myocardial infarction, Journal of Cardiovascular Translational Research, vol. 16, no. 3, p. 606-607, 2022. https://doi.org/10.1007/s12265-022-10344-8
[7] F. Li, A. Liu, M. Zhao, & L. Luo, Astrocytic chitinase?3?like protein 1 in neurological diseases: potential roles and future perspectives, Journal of Neurochemistry, vol. 165, no. 6, p. 772-790, 2023. https://doi.org/10.1111/jnc.15824

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.