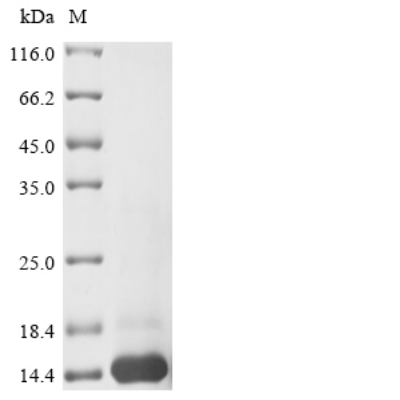
Recombinant Human Macrophage migration inhibitory factor (MIF)

Product Code	CSB-YP013826HU
Abbreviation	Recombinant Human MIF 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.	P14174
Storage Buffer	Tris-based buffer,50% glycerol
Product Type	Recombinant Proteins
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	PMFIVNTNVPRASVPDGFLSELTQQLAQATGKPPQYIAVHVVPDQLMAFGGSS EPCALCSLHSIGKIGGAQNRSYSKLLCGLLAERLRISPDRVYINYYDMNAANVG WNNSTFA
Research Area	Immunology
Source	Yeast
Target Names	MIF
Protein Names	Recommended name: Macrophage migration inhibitory factor Short name= MIF EC= 5.3.2.1 Alternative name(s): Glycosylation-inhibiting factor Short name= GIF L-dopachrome isomerase L-dopachrome tautomerase EC= 5.3.3
Expression Region	2-115aa
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	14.4
Protein Length	Full Length of Mature Protein
Image	



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

Description

Producing the recombinant human macrophage migration inhibitory factor (MIF) with an N-terminal 6xHis-tag in yeast involves cloning the desired gene, along with the N-terminal His-tag sequence, into a suitable vector and transforming yeast cells. The desired gene encodes the full length of the human mature MIF (2-115aa). After inducing protein expression, the positive yeast cells are lysed to release the recombinant MIF protein, which is purified using affinity chromatography. The purity is checked by SDS-PAGE, greater than 85%.

Human MIF is an evolutionarily conserved protein with both extracellular immune-modulating and intracellular cell-regulatory functions [1]. It is constitutively expressed and stored in preformed cytoplasmic pools in immune cells such as monocytes, macrophages, T and B lymphocytes, eosinophils, neutrophils, and dendritic cells, and is rapidly released in response to stimuli [2]. MIF is involved in various functions such as chemotaxis, leukocyte recruitment, and immune modulation [2].

Genetic studies have shown significant relationships between high-expression MIF alleles and host inflammatory responses, as well as improved clinical outcomes from infections [3]. Furthermore, MIF has been linked to inflammation, autoimmune diseases, and stress responses, promoting the pro-inflammatory functions of immune cells [4]. It plays a role in regulating the NLRP3 inflammasome activation and downstream IL-1β production in human monocytes [5]. MIF is up-regulated in atherosclerotic lesions and correlates with coronary artery disease [6].

References:
[1] D. Sinitski, K. Grüner, M. Brandhofer, C. Kontos, P. Winkler, A. Reinstädleret al., Cross-kingdom mimicry of the receptor signaling and leukocyte recruitment activity of a human cytokine by its plant orthologs, Journal of Biological Chemistry, vol. 295, no. 3, p. 850-867, 2019. https://doi.org/10.1074/jbc.ra119.009716
[2] M. Tarasuk, O. Poungpair, D. Ungsupravate, K. Bangphoomi, W. Chaicumpa, & P. Yenchitsomanus, Human single-chain variable fragment antibody inhibits macrophage migration inhibitory factor tautomerase activity, International Journal of Molecular Medicine, vol. 33, no. 3, p. 515-522, 2014. https://doi.org/10.3892/ijmm.2014.1622
[3] R. Bucala, Mif, mif alleles, and prospects for therapeutic intervention in autoimmunity, Journal of Clinical Immunology, vol. 33, no. S1, p. 72-78, 2012.

https://doi.org/10.1007/s10875-012-9781-1
[4] T. Calandra and T. Roger, Macrophage migration inhibitory factor: a regulator of innate immunity, Nature Reviews Immunology, vol. 3, no. 10, p. 791-800, 2003. https://doi.org/10.1038/nri1200
[5] M. Shin, Y. Kang, E. Wahl, H. Park, R. Lazova, L. Lenget al., Macrophage migration inhibitory factor regulates u1 small nuclear rnp immune complex–mediated activation of the nlrp3 inflammasome, Arthritis & Rheumatology, vol. 71, no. 1, p. 109-120, 2018. https://doi.org/10.1002/art.40672
[6] D. Sinitski, C. Kontos, C. Krammer, Y. Asare, A. Kapurniotu, & J. Bernhagen, Macrophage migration inhibitory factor (mif)-based therapeutic concepts in atherosclerosis and inflammation, Thrombosis and Haemostasis, vol. 119, no. 04, p. 553-566, 2019. https://doi.org/10.1055/s-0039-1677803

Shelf Life

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