PRODUCT INFORMATION

HGF (human, recombinant)

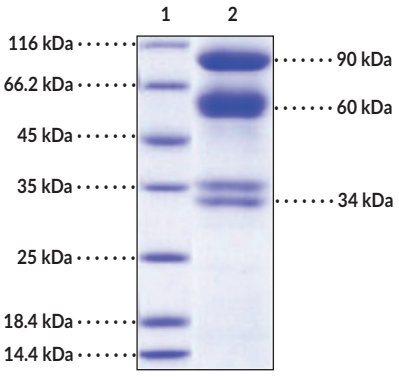
Item No. 32052

Overview and Properties

Synonyms:	Hepatocyte Growth Factor, Hepatopoietin-A, HPTA, Lung Fibroblast-derived Mitogen, Scatter Factor
Source:	Active recombinant human HGF expressed in CHO cells
Amino Acids:	32-728
Uniprot No.:	P14210
Molecular Weight:	79.7 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥93% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.0, with 100 mM arginine and 0.05% Tween 20
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Bioactivity:	See figures for details

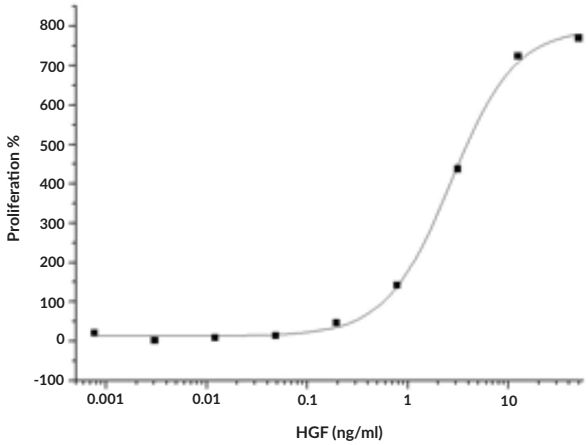
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: HGF

SDS-PAGE Analysis of HGF. This protein has a calculated molecular weight of 79.7 kDa. It has an apparent molecular weight of approximately 90, 60, and 34 kDa for pro-HGF, the heavy α chain, and the light β chain, respectively, due to glycosylation.



HGF Neutralizes TGF-β-Mediated Inhibition of Mv-1-Lu Cell Proliferation. The ED_{50} for this effect is typically 2-10 ng/ml.

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Description

Hepatocyte growth factor (HGF) is produced by cells of mesenchymal origin and has roles in cell proliferation, survival, motility, and morphogenesis.[1,2] *HGF* encodes the inactive polypeptide chain pre-pro-HGF that is composed of a signal sequence (1-31), a 69 kDa heavy α chain (32-494), and a 34 kDa light β chain (495-728).[2] Degradation of the signaling peptide produces pro-HGF which is also cleaved between Arg494 and Val495, primarily by the protease HGF activator (HGF-A), to release the α and β chains. The free α and β chains then form an active heterodimer *via* disulfide bonding of cysteine residues that binds to the MET receptor to induce intracellular signaling. Transgenic overexpression of *HGF* increases β-cell proliferation, insulin production, and glucose tolerance in mice.[3] Pharmacological inhibition of HGF decreases β-cell mass and induces hyperglycemia and glucose intolerance, markers of gestational diabetes, in pregnant rats. High serum levels of HGF are associated with metastasis, while low serum levels of HGF are positively correlated with progression-free survival and overall survival in lung, gastric, and colon cancers, as well as malignant melanoma.[4] Intramuscular injection of HGF into ischemic myocardium increases blood flow and prevents myocardial dysfunction in a canine model of myocardial infarction.[5] Cayman's HGF (human, recombinant) protein can be used in cell-based assay applications. This protein, pro-HGF, which can be further processed into the α and β chains, consists of 697 amino acids, has a calculated molecular weight of 79.7 kDa, and a predicted N-terminus of Glu32 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is 90, 60, and 34 kDa for pro-HGF, the heavy α chain, and the light β chain, respectively, due to glycosylation.

References

1. Chirgadze, D.Y., Hepple, J., Byrd, R.A., *et al.* Insights into the structure of hepatocyte growth factor/scatter factor (HGF/SF) and implications for receptor activation. *FEBS Lett.* **430(1-2)**, 126-129 (1998).
2. Fajardo-Puerta, A.B., Prado, M.M., Frampton, A.E., *et al.* Gene of the month: *HGF*. *J. Clin. Pathol.* **69(7)**, 575-579 (2016).
3. Oliveira, A.G., Araújo, T.G., de Melo Carvalho, B., *et al.* The role of hepatocyte growth factor (HGF) in insulin resistance and diabetes. *Front. Endocrinol. (Lausanne)* **9**, 503 (2018).
4. Matsumoto, K., Umitsu, M., De Silva, D.M., *et al.* Hepatocyte growth factor/MET in cancer progression and biomarker discovery. *Cancer Sci.* **108(3)**, 296-307 (2017).
5. Morishita, R., Aoki, M., Yo, Y., *et al.* Hepatocyte growth factor as cardiovascular hormone: Role of HGF in the pathogenesis of cardiovascular disease. *Endocr. J.* **49(3)**, 273-284 (2002).

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