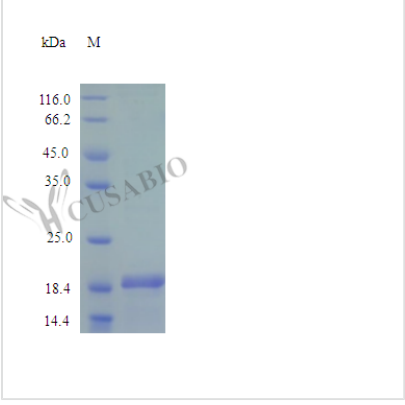
Recombinant Human Indian hedgehog protein (IHH), partial (Active)

Product Code	CSB-AP000421HU
Abbreviation	Recombinant Human IHH protein, partial (Active)
Uniprot No.	Q14623
Storage Buffer	Lyophilized from a 0.2 μm filtered 1 × PBS with 0.02% Tween-20, pH 7.0.
Product Type	Others
Immunogen Species	Homo sapiens (Human)
Biological Activity	Fully biologically active when compared to standard. The ED50 as determined by its ability to induce alkaline phosphatase production by C3H10T1/2(CCL-226) cells is 3.0-10 μg/ml.
Purity	>96% as determined by SDS-PAGE.
Sequence	II+GPGRVVGS RRRPPRKLVP LAYKQFSPNV PEKTLGASGR YEGKIARSSE RFKELTPNYN PDIIFKDEEN TGADRLMTQR CKDRLNSLAI SVMNQWPGVK LRVTEGWDED GHHSEESLHY EGRAVDITTS DRDRNKYGLL ARLAVEAGFD WVYYESKAHV HCSVKSEHSA AAKTGG
Research Area	Stem Cells
Source	E.Coli
Target Names	IHH
Expression Region	29-202aa
Tag Info	Tag-Free
Mol. Weight	19.8 kDa
Protein Length	Partial
PubMed ID	15489334; 7590746; 7720571; 9593755; 16335952; 20519495; 21537345; 11455389; 12384778; 12632327
Image	

Description

Recombinant human Indian hedgehog protein (IHH) generation starts with the isolation of the IHH protein (29-202aa) encoding gene, which is cloned into an expression vector. This vector is introduced into E. coli cells through transfection. The E. coli cells are grown in bioreactors under optimal conditions to express the protein. After sufficient growth, the cells are lysed to release the protein. The IHH protein is purified using affinity chromatography. Quality control tests have ensured the final product's purity and activity before it is used in research applications. Its activity has been validated by inducing alkaline phosphatase production via C3H10T1/2(CCL-226) cells, with the ED50 of 3.0-10 μg/ml. Its endotoxin content is less than 1.0 EU/μg as determined by the LAL method. Its purity is over 96% as determined by SDS-PAGE.

IHH is a crucial member of the Hedgehog (Hh) family of morphogenetic proteins, which also includes Sonic Hedgehog (SHH) and Desert Hedgehog (DHH). IHH plays a significant role in various biological processes such as chondrocyte differentiation, proliferation, and maturation, particularly during endochondral ossification [1]. The Hh family of proteins is essential for both embryonic development and the maintenance of adult vasculature [2]. In mammals, the Hh family consists of SHH, IHH, and DHH, which encode secreted proteins that induce concentration-dependent responses in target cells [3]. IHH regulates senescence in bone marrow-derived mesenchymal stem cells through modulation of specific pathways [4]. IHH is involved in chondrogenesis and is expressed during bone formation [5]. The expression of IHH is increased in certain conditions like chronic allograft dysfunction. Additionally, IHH is prominently expressed in developing cartilage and plays a role in skeletal cell actions.

References:

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[3] M. Al?Azab, B. Wang, A. Elkhider, W. Walana, W. Li, B. Yuanet al., Indian hedgehog regulates senescence in bone marrow-derived mesenchymal stem cell through modulation of ros/mtor/4ebp1, p70s6k1/2 pathway, Aging, vol. 12, no. 7, p. 5693-5715, 2020. https://doi.org/10.18632/aging.102958
[4] C. Toerne, J. Bedke, S. Safi, S. Porubsky, N. Gretz, R. Loeweet al., Modulation of wnt and hedgehog signaling pathways is linked to retinoic acid-induced amelioration of chronic allograft dysfunction, American Journal of Transplantation, vol. 12, no. 1, p. 55-68, 2012. https://doi.org/10.1111/j.1600-6143.2011.03776.x
[5] M. Iwamoto, M. Enomoto-Iwamoto, & K. Kurisu, Actions of hedgehog proteins on skeletal cells, Critical Reviews in Oral Biology & Medicine, vol. 10, no. 4, p. 477-486, 1999. https://doi.org/10.1177/10454411990100040401

Endotoxin	Less than 1.0 EU/μg as determined by LAL method.
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.