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CTGF Human

Connective Tissue Growth Factor Human Recombinant
GRF0019

Product Overview

Name	CTGF Human
Description	
Connective Tissue Growth Factor Human Recombinant	
Accession (Primary)	P29279
Synonyms	
CCN2, NOV2, HCS24, IGFBP8, MGC102839, CTGF, Connective Tissue Growth Factor.	
Introduction	

Connective Tissue Growth Factor is a part of the CCN family of proteins. The CCN family presently consists of six members in human also known as: Cyr61 (Cystein rich 61), CTGF, Nov (Nephroblastoma Overexpressed gene), WISP-1, 2 and 3 (Wnt-1 Induced Secreted Proteins). CCN proteins are matricellular proteins which are involved in the regulation of various cellular functions including: proliferation, differentiation, survival, adhesion and migration. They are expressed in derivatives of the three embryonic sheets and are implicated in the development of kidney, nervous system, muscle, bone marrow, cartilage and bone. During adulthood, they are implicated in wound healing, bone fracture repair, and pathologies such as: tumorigenesis,fibrosis and vascular ailments. Full length secreted CCN proteins can show an antiproliferative activity, whereas truncated isoforms are likely to stimulate proliferation and behave as oncogenes. The full length protein consists of 4 modules: Module I shares partial identity with the N-terminal part of the Insulin-like Growth Factor Binding Proteins (IGFBPs). Module II includes a stretch of 70amino acid residues – which shares sequence identity with the Von Willebrand Factor Type C repeat (VWC). Module III contains sequences sharing identity with the Thrombospondin type 1 repeat (TSP1) (WSXCSXXCG), which is thought to be implicated in the binding of sulfated glycoconjugates and to be important for cell adhesion. Module IV, also designated CT, is encoded by exon5. It is the leasts conserved one of the four domains at the level of nucleotide sequence, but it appears to be critical for several of the biological functions attributed to the CCN proteins. Proteolysis of the secreted full-length CCN proteins that has been reported in the case of CCN2 and CCN3 might result in the production of CCN-derived peptides with high affinity for ligands that full-length CNN proteins bind only poorly. Amino-truncated CCN2 isoforms were biologically active whereas no specific biological activity has been attributed to the truncated CCN3. Although the molecular processes underlying the production of these secreted isoforms is presently unknown, it is important to note that proteolysis occur at the same amino acid residues in both CCN2 and CCN3. An elevated expression of CCN2 has also been detected by Northern blotting in human invasive mammary ductal carcinomas,

dermatofibromas, pyogenic granuloma, endothelial cells of angiolipomas and angioleiomyomas, and in pancreatic tumors. A study performed with chondrosarcomas representative of various histological grades established that CCN2 expression was closely correlated with increasing levels of malignancy. In agreement with CCN2 playing a role in brain tumor angiogenesis, immunocytochemistry studies indicated that both glioblastoma tumor cells and proliferating endothelial cells stained positive for CCN2. In astrocytomas, CCN2 expression was particularly elevated in high grade tumors, with a marked effect of CCN2 on cell proliferation. Downregulation of CCN2 expression in these cells was associated with a growth arrest at the G1/S transition while over-expression of CCN2 induced a two-fold increase of the number of cells in the G1 phase. Gene profiling analysis allowed to identify a set of about 50 genes whose expression might account for the proliferative activity of CCN2 in these cells. CCN2 was seen in a higher proportion of mononuclear cells of patients with acute lymphoblastic leukemia.

Source

HEK293 cells.

Physical Appearance

Filtered White lyophilized (freeze-dried) powder.

Formulation

CTGF filtered (0.4 µm) and lyophilized from 0.5mg/ml in 20 mM Tris buffer and 50 mM NaCl, pH 7.5.

Stability

Store lyophilized protein at -20°C. Aliquot the product after reconstitution to avoid repeated freezing/thawing cycles . Reconstituted protein can be stored at 4°C for a limited period of time; it does not show any change after two weeks at 4°C.

Purity

Greater than 95.0% as determined by SDS-PAGE.

Amino acid sequence

MHHHHHH RLE DTFGPDPTMI RANCLVQTTE WSACSKTCGM GISTRVTNDN ASCRLEKQSR LCMVRPCEAD LEENIKKGKK.

Solubility

It is recommended to add deionized water to prepare a working stock solution of approximately 0.5mg/ml and let the lyophilized pellet dissolve completely.

Precautions

CTGF Human is for research use only and not for use in diagnostic or therapeutic procedures.

Target Information: (P29279)

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Background

Title: Connective Tissue Growth Factor Human Recombinant: Insights into Production, Function, and Therapeutic Potential Abstract: Connective tissue growth factor (CTGF) is a multifunctional protein that plays a critical role in tissue homeostasis and repair. This research paper provides a comprehensive analysis of human recombinant CTGF, focusing on its production, characterization, and potential therapeutic applications. The paper discusses the significance of CTGF in connective tissue development, fibrosis, and wound healing. Furthermore, it explores the ongoing research and clinical trials investigating the therapeutic potential of recombinant CTGF in various pathological conditions. The information presented in this paper aims to deepen our understanding of human recombinant CTGF and its utility as a research tool and a potential therapeutic agent. Introduction: Connective tissue growth factor (CTGF) is a secreted protein that belongs to the CCN (Cyr61, CTGF, Nov) family. It is involved in diverse cellular processes, including cell proliferation, extracellular matrix synthesis, and angiogenesis. Human recombinant CTGF, produced through genetic engineering techniques, enables researchers to study its biological functions and explore its therapeutic potential. Production and Characterization: Recombinant CTGF is typically generated using expression systems such as mammalian cells or bacteria. The protein is then purified and characterized to ensure its structural integrity and functional activity. Quality control measures are implemented to confirm the specificity and biological activity of the recombinant CTGF. Role in Tissue Homeostasis and Repair: CTGF plays a critical role in connective tissue development, maintenance, and repair. It promotes the synthesis of extracellular matrix components, such as collagen and fibronectin, and regulates the activity of various growth factors. CTGF is also involved in wound healing and tissue remodeling processes. Understanding the molecular mechanisms underlying CTGF-mediated tissue repair provides insights into potential therapeutic interventions. Therapeutic Implications: The dysregulation of CTGF expression and signaling has been implicated in several pathological conditions, including fibrosis, arthritis, and cancer. Recombinant CTGF holds promise as a potential therapeutic agent for these diseases. Preclinical and clinical studies are being conducted to evaluate the safety and efficacy of CTGF-based therapies, such as CTGF-targeting antibodies and small-molecule inhibitors. Conclusion: Human recombinant CTGF is a valuable research tool and a potential therapeutic target in various pathological conditions. Its production, characterization, and applications in connective tissue biology contribute to our understanding of tissue repair mechanisms and the development of novel therapeutic strategies. Continued research and clinical trials exploring the therapeutic potential of recombinant CTGF offer promising avenues for improving patient outcomes.

References for protein:

Bibliography: Leask, A., & Abraham, D. J. (2003). TGF-? signaling and the fibrotic response. FASEB Journal, 18(7), 816-827. Grotendorst, G. R., & Duncan, M. R. (2005). Individual domains of connective tissue growth factor regulate fibroblast proliferation and myofibroblast differentiation. The FASEB Journal, 19(7), 729-738. Brigstock, D. R. (2003).

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