



LD Biopharma, Inc.
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- PRODUCT DATA SHEET -

Name of Product: Recombinant Human VTN-Col4 α 1 Fusion Protein
Catalog Number: hRP-1854
Manufacturer: LD Biopharma, Inc.

Introduction

Extracellular matrix (EMC) and growth factor signaling environments are part of the nature mechanism for regulating stem cell fate. These micro-environmental stimuli are processed through a veritable network of intracellular signaling pathway. Evidence to date suggests that understanding of interactions between these pathway in defined cell culture condition are critical in controlling cell fate in vitro in the development of cell based therapeutic applications. Collagen is the main structure protein in the extracellular space in the various human connective tissues, making up from 25% to 35% of the whole body protein content. So far, at least 28 types of collagen have been identified; each of them plays a different role in cell signaling. Nature collagen protein is composed of a triple helix with various protein modifications, such as hydroxyproline content, making it difficult to obtain recombinant form of collagen protein in cost effective way. Currently many active domains (peptide) from various collagens have been identified, which provide a opportunity for protein – engineering for its production.

To develop a specific coating matrix protein for representing human Collagen Type-IV α 1, two heparin-binding domain peptide from human collagen Type-IV α 1, were joint together with small linker and then fusion with human vitronectin (62-398aa). As human vitronectin provides a excellent polystyrene surface binding capacity, this recombinant VTN-Collagen peptide fusion might serve as a unique coating matrix for various stem cell differentiation applications in vitro.

TAGSCLRKFSTM GGGS GEFYFDLRLKGDK

Two active peptide fusion fragment of human collagen Type-IV α 1 (29aa) was further fused to human vitronectin protein (62- 398aa with flexible linker domain GGGS in between) to generate a fusion protein, Named as VTN \square ColIV α 1. This VTN \square ColIV α 1 peptide cDNA was constructed with codon optimization gene synthesis technology. This protein was expressed in E. coli as inclusion bodies. The final product was refolded using our unique “temperature shift inclusion body refolding” technology and chromatographically purified.

Gene Symbol: None (Named as VTN-ColIV α 1 by manufacture)



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Accession Number: NP_000629 + (artificial synthetic protein)
Species: Based on Human protein sequence
Size: 50 µg / Vial
Composition: 1.0 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose and DTT.
Storage: In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

Key References

Guokai Chen, et al. *Chemically defined conditions for human iPSC derivation and culture*. Nature Methods 8. 424-429 (2011).

Braam, S.R. et al. *Recombinant vitronectin is a functionally defined substrate that supports human embryonic stem cell self-renewal via alphavbeta5 integrin*. Stem Cells 26, 2257–2265 (2008).

Koliakos GG. et al. *The binding of heparin to type IV collagen: domain specificity with identification of peptide sequence from alpha 1(IV) and alpha 2(IV) which preferentially bind heparin*. JBC. Feb 5: 264(4) : 2313 – 2323 (1989).

Applications

When coated at 0.5 - 1 ug/ ml per cm² and combined with chemically defined culture medium, this recombinant protein may be used as matrix protein to test collagen IV heparin binding domain function for benefiting different primary human cell culture in vitro.

Quality Control

Purity: > 90% by SDS-PAGE.

Recombinant Protein Sequence

MTRGDVFTMPED EYTVYDDGEEKNNATVHEQVGGPSLTSDLQAQSKGNPEQTPVLKPEEEAPAP
EVGASKPEGIDSRPETLHPGRPQPPAEELCSGKPFDAFTDLKNGSLFAFRGQYCYELDEKAVR
PGYPKLIRDVWGIEGPIDAAFTTRINCQGKTYLFKGSQYWRFEDGVLDPDYPRNISDGFDPDIPDN
VDAALALPAHSYSGRERVYFFKKGQYWEYQFQHQP SQEECEGSSLSAVFEHFAMMQRDSWEDIF
ELLFWGRTSAGTRQPQFISR DWHGVP GQVDAAMAGRIYISGMAPRPSLAKKQRF RHRNRKGYRS
QRGHSRGRNQNSRRPSRGGGGSGGGGSNIEFTAGSCLRK FSTMGGGSGEFYFDLRLKGDK