TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM
FOR GLOBAL CONTACT DETAILS VISIT WWW.STEMCELL.COM

Human Recombinant IGF-I LR3, ACF

Insulin-like growth factor 1 long arginine 3

Catalog #100-2060 100 µg

Product Description

Insulin-like growth factor 1 long arginine 3 (IGF-I LR3) is a synthetic analog of IGF-I (Francis et al). IGF-I is a polypeptide that belongs to the family of insulin-like growth factors that are similar in molecular structure to proinsulin. IGF-I binds to the IGF-I receptor and is a potent activator of the PI3K/AKT pathway and also activates ERK1/2 signaling. IGF-I LR3 has >100-fold reduced affinity for IGF-binding proteins (IGFBPs), which reduces availability of IGFs in cell culture (Voorhamme & Yandell). IGF-I is required for embryonic development and it is produced mainly in the liver in response to a hepatocyte growth hormone. In the absence of insulin, IGF-I is necessary for the maintenance of human pluripotent stem cells (Wang et al.). Together with IL-3, IGF-I stimulates differentiation and proliferation of myeloid cells and has been shown to regulate lymphopoiesis by stimulating proliferation and differentiation of T and B cells in lymphoid organs (Heemskerk et al.). This cytokine can be used in human, bovine, and porcine workflows. This product is animal component-free (ACF).

Product Information

Alternative Names: IBP1, IGF-IA, IGF-IB, IGF1A, Insulin-like growth factor 1, Long R3 IGF-I, Mechano growth factor, MGF, Somatomedin C

Accession Number: P05019

Predicted Molecular Mass: 9 kDa

Species: Human, Other

Product Formulation: Lyophilized from a solution containing acetonitrile and trifluoroacetic acid.

Source: E. coli

Purity: ≥ 98% by SDS-PAGE

Specifications

Activity: The EC50 is approximately 11.7 ng/mL (~1.3 nM), as determined by a MAP/ERK-responsive luciferase reporter assay in transfected MCF-7 cells.

Endotoxin Level: Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 0.1 EU/µg protein.

Preparation and Storage

Stability and Storage: Store at -20 to -80°C. Stable as supplied for 12 months from date of receipt.

Preparation: Centrifuge vial before opening. Reconstitute the product in sterile water to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex.

OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1 - 1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at -20 to -80°C for more than 12 months. Avoid repeated freeze-thaw cycles.

Data

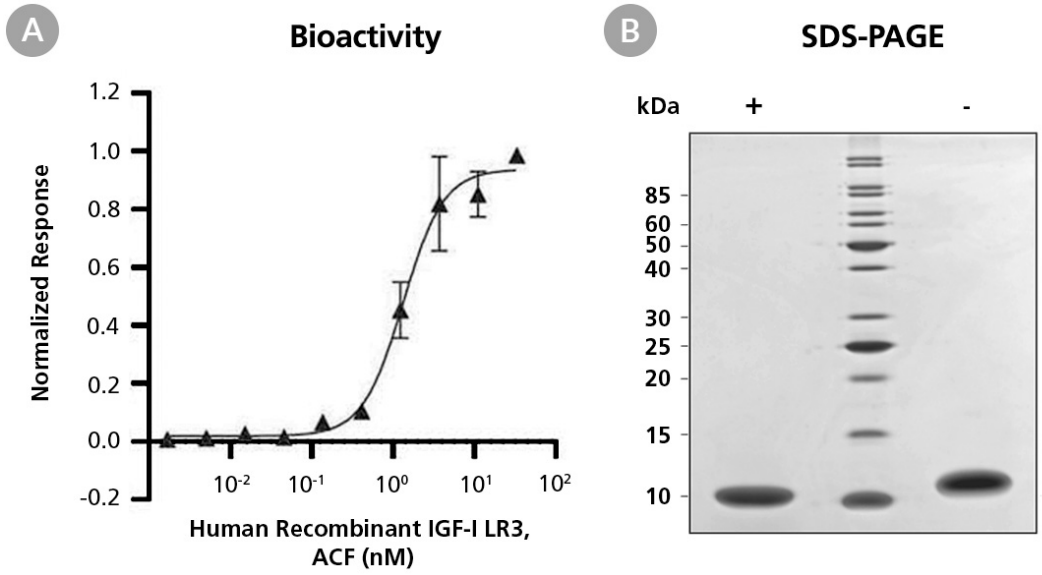

Figure 1. Biological Activity and Molecular Mass of Human Recombinant IGF-I LR3, ACF

(A) The biological activity of Human Recombinant IGF-I LR3, ACF was tested by its ability to induce MAP/ERK signaling in transfected MCF-7 cells using a luciferase reporter assay. Firefly luciferase activity was normalized to control Renilla luciferase activity. The EC50 is defined as the effective concentration of the growth factor at which IGF-I LR3 response is at 50% of maximum. The EC50 in the above example is 1.3 nM (11.7 ng/mL). (B) 3 µg of Human Recombinant IGF-I LR3, ACF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant IGF-I LR3, ACF has a predicted molecular mass of 9 kDa.

Related Products

For a complete list of cytokines or peptide pools, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

References

Francis, GL et al. (1992) Novel recombinant fusion protein analogues of insulin-like growth factor (IGF)-I indicate the relative importance of IGF-binding protein and receptor binding for enhanced biological potency. J Mol Endocrinol 8(3): 213–23.

Heemskerk VH et al. (1999) Insulin-like growth factor-1 (IGF-I) and growth hormone (GH) in immunity and inflammation. Cytokine Growth Factor Rev 10(1): 5–14.

Voorhamme D & Yandell CA (2006) LONGTMR3IGF-I as a more potent alternative to insulin in serum-free culture of HEK293 cells. Mol Biotechnol 34: 201–4.

Wang L et al. (2007) Self-renewal of human embryonic stem cells requires insulin-like growth factor-1 receptor and ERBB2 receptor signaling. Blood 110(12): 4111–9.