

GMP LR3 IGF-I/IGF-1 Protein, Human (83a.a, E51R)

Cat. No.:	HY-P70783G
Synonyms:	Long R3 IGF-I; Insulin-like growth factor I; MGF; Somatomedin-C; IBP1
Species:	Human
Source:	E. coli
Accession:	P05019-1 (G49-A118, E51R, with a 13 amino acid extension peptide at the N terminal)
Gene ID:	3479
Molecular Weight:	Approximately 11 kDa

PROPERTIES

AA Sequence	M F P A M P L S S L F V N G P R T L C G A E L V D A L Q F V C G D R G F Y F N K P T G Y G S S S R R A P Q T G I V D E C C F R S C D L R R L E M Y C A P L K P A K S A
Biological Activity	Measured in a serum-free cell proliferation assay using MCF-7 human breast cancer cells. The specific activity is $> 1 \times 10^6$ U/mg.
Appearance	Lyophilized powder
Formulation	Lyophilized from a 0.2 μ m filtered solution of 20 mM NaAc-HAc, 4% Mannitol, pH 4.5.
Endotoxin Level	<0.1 EU/ μ g, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 μ g/mL in injection water.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	The LR3 IGF-I/IGF-1 protein, structurally and functionally akin to insulin, boasts significantly heightened growth-promoting activity compared to its counterpart. Positioned as a potential physiological regulator, LR3 IGF-I may govern [1-14C]-2-deoxy-D-glucose (2DG) transport and glycogen synthesis in osteoblasts, demonstrating effective stimulation of glucose transport in bone-derived osteoblastic (PyMS) cells even at markedly lower concentrations than insulin. Its multifaceted roles extend to potential involvement in synapse maturation and the Ca(2+)-dependent exocytosis essential for sensory perception of smell in the olfactory bulb. Operating as a ligand for IGF1R, LR3 IGF-I binds to the alpha subunit, initiating the activation of intrinsic tyrosine kinase activity, autophosphorylating tyrosine residues in the beta subunit. This activation
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triggers a cascade of downstream signaling events leading to the activation of the PI3K-AKT/PKB and Ras-MAPK pathways. Further, LR3 IGF-I forms crucial ternary complexes with integrins (ITGAV:ITGB3 and ITGA6:ITGB4) and IGFR1, essential for comprehensive IGF1 signaling, influencing the phosphorylation and activation of IGFR1, MAPK3/ERK1, MAPK1/ERK2, and AKT1. It also exhibits diverse molecular interactions, including with SH2D3C isoform 2.

Caution: Product has not been fully validated for medical applications. For research use only.

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