Recombinant Human Insulin R/CD220 B Isoform

Catalog Number: 8974-IR

DESCRIPTION

Source	Human embryonic kidney cell, HEK293-derived human Insulin R/CD220 protein His28-Arg762(α subunit) and Ser763-Lys956 with a c-terminal 10-His tag (β subunit) Accession # P06213.4
N-terminal Sequence Analysis	His28 (α subunit), Ser763 (β subunit)
Structure / Form	Disulfide-linked heterotetramer
Predicted Molecular Mass	107 kDa (α & β heterodimer)

SPECIFICATIONS

SDS-PAGE	105-120 kDa (α subunit) and 37-49 kDa (β subunit), reducing conditions
Activity	Measured by its binding ability in a functional ELISA. When 15 ng/mL of biotinylated recombinant human Insulin is added to serially diluted Recombinant Human Insulin R/CD220 B Isoform, the concentration of Recombinant Human Insulin R/CD220 B Isoform that produces 50% of the optimal binding response is 0.1-0.5 µg/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 250 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

The Insulin Receptor (gene name INSR, designated CD220) is a type I transmembrane glycoprotein in the Insulin/IGF Receptor family of receptor tyrosine kinases that share structural similarity and overlapping intracellular signaling events (1-3). The 1382 amino acid (aa) human Insulin R preproprotein (B isoform) is processed by proteolysis to remove the signal peptide and produce an extracellular α portion (aa 28-762), and an extracellular/transmembrane/cytoplasmic β subunit (aa 763-1382) (4). The extracellular domain (ECD) contains two homologous globular domains separated by a cysteine-rich domain and followed by three fibronectin type III domains. The intracellular region contains insulin-receptor substrate (IRS) docking sites, the kinase domain, and a phosphotyrosine-containing linker region. The human Insulin R ECD shares 96% aa sequence identity with mouse, rat, equine and canine Insulin R. As a result of alternative splicing, two INSR isoforms that differ by the absence (IR-A) or presence (IR-B) of a 12 aa residue sequence in the carboxyl terminus of the α subunit exist (4). IR-A expression is highest in fetal tissues and cancer cells, while IR-B is concentrated in adult differentiated cells (2-5). IR-A and IR-B may homodimerize, or heterodimerize with the IGF-I receptor (1, 3, 4). All receptor combinations bind insulin, IGF-I or IGF-II, but with differing affinities; for example, IR-A has considerably higher affinity for IGF-II as compared to IR-B (2-5). This system allows fine tuning of signaling pathways according to the concentrations of insulin, IGF-I and IGF-II, and expression of receptor subunits on the cell surface (2, 3). Insulin R signaling regulates glucose uptake and metabolism, but also contributes to cell growth, differentiation and apoptosis (2, 3, 5, 6). Mutations in the Insulin R gene have been linked severe insulin resistance (type A and Rabson-Mendenhall syndrome) that may include type II diabetes mellitus and, rarely, leprechaunism (Donohue syndrome) that also includes growth delays and endocrine system abnormalities (1, 7). This human Insulin R product consists of the entire ECD of the IR-B isoform.

References:

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Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449