

Insulin Receptor Protein, Human, Recombinant (short isoform, His)

General Information

Synonyms: Insulin Receptor;HHF5;CD220

Protein Construction: 28-944 aa

Species: Human

Expression Host: HEK293 Cells

Accession: P06213-2

Molecular Weight: 106 kDa (predicted); 116 kDa (reducing condition)

AA Sequence:

HLYPGEVCPGMDIRNNLTRLHELENCVIEGHLQILLMFKTRPEDFRDLSFPKLIMITDYLLLFRVYGLESKDLF
PNLTVIRGSRLFFNYALVIFEMVHLKELGLYNLMNITRGSVRIEKNNELCYLATIDWSRILDSVEDNYIVLNKDD
NEECGDICPGTAKGKTNCPATVINGQFVERCWTHSHCQKVCPTICKSHGCTAEGLCCHSECLGNCSQPDDPT
KCVACRNFYLDGRCVETCPPPYHFQDWRCVNFSCQDLHHKCKNSRRQGCHQYVIHNNKCIPECPSGYTM
NSSNLLCTPCLGPCPKVCHLLEGEKTIDSVTSAQELRGCTVINGSLIINIRGGNNLAAELEANLGLIEEISGYLKIR
RSYALVLSFFRKLRLIRGETLEIGNYSFYALDNQNLRLQWDSKHNLITQGLFFHYNPKLCLSEIHKMEEV
SGTKGRQERNDIALKTNGDQASCENELLKFSYIRTSFDKILLRWEPYWPPDFRDLLGFMLFYKEAPYQNVTEF
DGQDACGSNSWTVVDIDPPLRSNDPKSQNHPGWLMRGLKPWTQYAIQVTKLVTFSDERRTYGAKSDIIVVQT
DATNPSVPLDPISVSNSSSQIILKWKPPSDPNGNITHYLVFWERQAEDSELFELDYCLKGLKLPRTWSPPFES
EDSQKHQSEYEDSAGECCSPKTDSQLKELEESSFRKTFEDYLHNVVFPVPRSRKRRSLGDVGNVTVAVPT
VAAFNTSSTSPTSPEEHRPFKVVNKEESLVISGLRHFTGYRIELQACNQDTPPEERCSVAAYVSARTMPEAKA
DDIVGPVTHEIFENNVVHLMWQEPKEPNGLIVLYEVSYRRYGDEELHLCVSRKHFALERGCLRGLSPGNYSV
RIRATSLAGNGSWTEPTYFYVTDYLDVPSNIAK

QC Testing

Biological Activity: Measured by its binding ability in a functional ELISA. Immobilized Human INSR at 2 µg/mL can bind Anti-INSR recombinant antibody. The EC50 is 3.216-3.830 ng/mL.

Purity: > 95% as determined by SDS-PAGE

Endotoxin: < 1.0 EU/µg of the protein as determined by the LAL method.

Formulation: Lyophilized from a 0.2 µm sterile filtered PBS, 6% Trehalose, pH 7.4

Preparation and Storage

Reconstitution:

Reconstitute the lyophilized protein in distilled water. The product concentration should not be less than 100 µg/ml. Before opening, centrifuge the tube to collect powder at the bottom. After adding the reconstitution buffer, avoid vortexing or pipetting for mixing.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

INSR (Insulin receptor), also known as CD22, is a transmembrane receptor that is activated by insulin. INSR belongs to the protein kinase superfamily and exists as a tetramer consisting of two alpha subunits and two beta subunits linked by disulfide bonds. The alpha and beta subunits are encoded by a single INSR gene, and the beta subunits pass through the cellular membrane. As the receptor for insulin with tyrosine-protein kinase activity, INSR associates with downstream mediators upon binding to insulin, including IRS1 (insulin receptor substrate 1) and phosphatidylinositol 3'-kinase (PI3K). IRS-1 binding and phosphorylation eventually lead to an increase in the high-affinity glucose transporter (Glut4) molecules on the outer membrane of insulin-responsive tissues. INSR isoform long and isoform short are expressed in the peripheral nerve, kidney, liver, striated muscle, fibroblasts and skin, and is found as a hybrid receptor with IGF1R which also binds IGF1 in muscle, heart, kidney, adipose tissue, skeletal muscle, hepatoma, fibroblasts, spleen, and placenta. Defects in Insulin Receptor/INSR are the cause of Rabson-Mendenhall syndrome (Mendenhall syndrome), insulin resistance (Ins resistance), leprechaunism (Donohue syndrome), and familial hyperinsulinemic hypoglycemia 5 (HHF5). It may also be associated with noninsulin-dependent diabetes mellitus (NIDDM).

Reference

Ebina Y., et al.,(1985), The human insulin receptor cDNA: the structural basis for hormone-activated transmembrane signalling. Cell 40:747-758.

Ullrich A., et al., (1985), Human insulin receptor and its relationship to the tyrosine kinase family of oncogenes. Nature 313:756-761.

Grimwood J., et al.,(2004), The DNA sequence and biology of human chromosome 19.Nature 428:529-535.

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