Insulin Receptor Human HEK293

Product Data Sheet

Type: Recombinant
Source: HEK293
Species: Human
Other names: INSR Protein, IR, short isoform (HIR-A, IR-A), CD220

Cat. No.:
RD172041050 (0.05 mg)

Description

Total 927 AA, UniProt P06213-2 (His28-Lys944 of HIR-A, whole subunit alpha and extracellular domain of subunit beta). MW: 105.9 kDa (calculated), migrates at ~ 160 kDa on SDS PAGE. N-terminal linker (2 extra AA), C-terminal linker (2 extra AA) and C-terminal His-tag (6 extra AA). Protein identity confirmed by LC-MS/MS.

Introduction to the Molecule

Insulin receptor (IR) is an alpha2beta2-disulfide linked tetrameric tyrosin kinase receptor located in the plasma membrane of target cells. This glycoprotein is composed of two extracellular alpha-subunits (731 amino acids; 135 kDa) containing the insulin binding site and two transmembrane beta-subunits (620 amino acids; 95kDa) that possess intrinsic tyrosine kinase activity in their intracellular domains and transduce the insulin signal into the cell interior. The human insulin receptor is involved in glucose homeostasis, cell growth and differentiation. Binding of insulin leads to a conformational change of the receptor, resulting in ATP binding, autophosphorylation, and subsequent phosphorylation of insulin receptor substrate proteins that are linked to the action of two main signalling pathways. The PI3-K/Akt pathway is involved in the glucose transport to the cell, induction of proliferation or inhibition of apoptosis, while the Ras/MAPK pathway is involved mainly in the control of cell growth and differentiation. Two insulin receptor variants are produced in mammals by alternative splicing: IR-A lacking exon 11 and the full length IR-B. The IR-A and IR-B isoforms show different ligand binding affinity. IR-A is a high-affinity receptor not only for insulin but also for IGF-II, while IR-B may be considered a specific receptor for insulin. Both insulin receptor isoforms are coexpressed in cells, and the relative abundance of IR-A and IR-B is regulated by development stage- and tissue-specific factors. IR-A is predominantly expressed in fetal and cancer cells, whereas IR-B is predominantly expressed in well-differentiated tissues including liver, adipose tissue and skeletal muscle. Dysregulation of insulin receptor splicing, i.e., increased IR-A expression in adult life, may play an underestimated role in cancer progression. Insulin receptor is overexpressed in several tumors, including breast, colon, lung, ovary, and thyroid carcinomas. Moreover, human lymphocyte-derived malignant cells, such as the IM-9 cells, are abundantly endowed with high-affinity insulin receptors. Circulating forms of several classes of receptor molecules and their fragments have been identified in human plasma. The human insulin receptor was found to be secreted into the incubation medium by various cultured cell lines and Schaefer et al. reported that transgenic mice expressing and secreting the soluble ectodomain of human insulin receptor into the plasma showed chronic hyperglycemia. Another study has shown that injection of the purified His-tagged human insulin receptor alpha-subunit into veins of mice increased in the concentration of blood glucose. The soluble human insulin receptor ectodomain, which contains alpha-subunit and a extracellular part of beta-subunit, has been observed in human plasma of healthy individuals and observed at significantly elevated levels in plasma of patients with elevated blood glucose. Furthermore, the urinary soluble insulin receptor levels in patients with diabetes were also significantly higher than those in healthy volunteers and were significantly correlated with both urinary resistin and insulin levels.

Research topic

Diabetology - Insulin, C-Peptide, Proinsulin, Diabetology - Other Relevant Products, Energy metabolism and body weight regulation, Oncology

Amino Acid Sequence

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ASHLYPGEVC PGMDIRNNLT RLHELENCSV IEGHLQILLM FKTRPEDFRD LSFPKLIMIT DYLLLFRVYG LESLKDLFPN
LTVIRGSRLF FNYALVIFEM VHLKELGLYN LMNITRGSVR IEKNNELCYL ATIDWSRILD SVEDNYIVLN KDDNEECGDI
CPGTAKGKTN CPATVINGQF VERCWTHSHC QKVCPTICKS HGCTAEGLCC HSECLGNCSQ PDDPTKCVAC RNFYLDGRCV
ETCPPPYYHF QDWRCVNFSF CQDLHHKCKN SRRQGCHQYV IHNNKCIPEC PSGYTMNSSN LLCTPCLGPC PKVCHLLEGE
KTIDSVTSAQ ELRGCTVING SLIINIRGGN NLAAELEANL GLIEEISGYL KIRRSYALVS LSFFRKLRLI RGETLEIGNY
SFYALDNQNL RQLWDWSKHN LTITQGKLFF HYNPKLCLSE IHKMEEVSGT KGRQERNDIA LKTNGDQASC ENELLKFSYI
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RTSFDKILLR WEPYWPPDFR DLLGFMLFYK EAPYQNVTEF DGQDACGSNS WTVVDIDPPL RSNDPKSQNH PGWLMRGLKP
WTQYAIFVKT LVTFSDERRT YGAKSDIIYV QTDATNPSVP LDPISVSNSS SQIILKWKPP SDPNGNITHY LVFWERQAED
SELFELDYCL KGLKLPSRTW SPPFESEDSQ KHNQSEYEDS AGECCSCPKT DSQILKELEE SSFRKTFEDY LHNVVFVPRP
SRKRRSLGDV GNVTVAVPTV AAFPNTSSTS VPTSPEEHRP FEKVVNKESL VISGLRHFTG YRIELQACNQ DTPEERCSVA
AYVSARTMPE AKADDIVGPV THEIFENNVV HLMWQEPKEP NGLIVLYEVS YRRYGDEELH LCVSRKHFAL ERGCRLRGLS
PGNYSVRIRA TSLAGNGSWT EPTYFYVTDY LDVPSNIAKK L**HHHHHH**

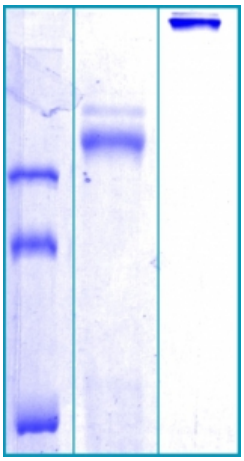
Source

HEK293

Purity

Purity as determined by densitometric image analysis: >95%

SDS-PAGE gel



8% SDS-PAGE separation of Human INSR Protein:
1. M.W. marker - 45, 66, 97 kDa
2. reduced and heated sample, 2.5µg/lane
3. non-reduced and non-heated sample, 2.5µg/lane

Endotoxin

<0.1 EU/µg

Formulation

Filtered (0.4 µm) and lyophilized in 0.5 mg/mL in 0.05 M phosphate buffer, 0.075 M NaCl, pH 7.4

Reconstitution

Add 100ul of deionized water to prepare a working stock solution of 0.5 mg/mL and let the lyophilized pellet dissolve completely. Product is not sterile! Please filter the product by an appropriate sterile filter before using it in the cell culture.

Shipping

At ambient temperature. Upon receipt, store the product at the temperature recommended below.

Storage, Stability/Shelf Life

Store the lyophilized protein at -80°C. Lyophilized protein remains stable until the expiry date when stored at -80°C. Aliquot reconstituted protein to avoid repeated freezing/thawing cycles and store at -80°C for long term storage. Reconstituted protein can be stored at 4°C for a week.

Quality Control Test

BCA to determine quantity of the protein.
SDS PAGE to determine purity of the protein.
LAL TEST to determine quantity of the endotoxin.

Applications

Cell culture and/or animal studies, ELISA, Western blotting

Note

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