**Product Information**

**INSULIN RECEPTOR SUBSTRATE-1 (IRS-1)**

Rat, Recombinant
Expressed in Sf9 insect cells

**Product Number** I 1031
Storage temperature −70 °C

**Product Description**
Insulin receptor substrate-1 (IRS-1) is produced from a DNA sequence encoding rat IRS-1 expressed in Sf9 insect cells. IRS-1 is purified using Sephacryl S-200HR chromatography. Its molecular weight is approximately 170 kDa by SDS-PAGE.

IRS-1 is a major effector of insulin receptor action. IRS-1 is an adapter protein that binds to the activated insulin receptor through its phosphotyrosine-binding domain and is phosphorylated on multiple tyrosine residues. Phosphorylated IRS-1 binds cytoplasmic signaling proteins containing SH2 domains and in turn helps receptor mediated signal transduction.

The insulin receptor is a transmembrane protein that consists of four subunits (2α2β) and exhibits tyrosine kinase activity. Upon binding of insulin to the extra-cellular subunit, the 95 kDa tyrosine kinase subunit is activated. Receptor-mediated phosphorylation of the IRS proteins triggers the induction of processes such as glucose transport and mitogenesis.

Phosphorylated IRS-1 associates with and activates phosphatidylinositol 3’-kinase (PI3K),2 that in turn increases the intracellular production of phosphatidylinositol 3,4-bisphosphate (P(3,4)P2) and phosphatidylinositol 3,4,5-trisphosphate (P(3,4,5)P3). These molecules act as second messengers in many cellular functions through binding to the pleckstrin homology domain of effector proteins including IRS-1.3 IRS-1-induced activation of PI3K induces activation of AKT(protein kinase B and translocation of the glucose transporter (GLUT4) to the cell membrane.4,5

IRS-1 is suitable for use as a tyrosine kinase substrate and for the activation of PI3K. Recombinant rat IRS-1 is not phosphorylated.

**Reagent**
Recombinant rat IRS-1 is supplied as a solution containing 20 µg protein in 50 mM Tris HCl, pH 7.8, and 1 mM NaCl.

**Storage/Stability**
The solution is stable for at least one year if stored at −70 °C. Centrifuge the original vial after thawing and prior to removing the cap for maximum recovery of the product. Upon initial thawing, freeze the solution in working aliquots for extended storage. Avoid repeated freeze-thaw cycles. Do not store in a frost-free freezer.

**Product Profile**
Purity is approximately 25% by SDS-PAGE visualized by silver staining.

**References**

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