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Product Information

Anti-phospho-Insulin Receptor Substrate-1 (IRS-1) (pSer³¹²)

produced in rabbit, affinity isolated antibody

Catalog Number **I2533**

Product Description

Anti-phospho-Insulin Receptor Substrate-1 (IRS-1) (pSer³¹²) is developed in rabbit using a synthetic phosphorylated peptide derived from the region of IRS-1 that contains Ser³¹² as immunogen. The antibody is preadsorbed to remove any reactivity towards a non-phosphorylated IRS-1. The final product is generated by affinity chromatography using an IRS-1-derived peptide that is phosphorylated at Ser³¹².

Anti-phospho-IRS-1 (pSer³¹²) recognizes human IRS-1 by immunoblotting. Mouse and rat (100% homology) IRS-1 have not been tested.

Insulin Receptor Substrate-1 (IRS-1) is a major endogenous substrate of the insulin receptor kinase. It functions as a cytoplasmic docking protein with multiple phosphorylation sites, involved in metabolic and proliferative signaling by insulin, IL-4 and other cytokines. IRS-1 functions to enhance growth hormone-induced proliferative signaling. The activated insulin receptor phosphorylates IRS proteins on multiple tyrosine residues that serve as docking sites for downstream mediators of metabolic actions, such as phosphatidylinositol-3 (PI3) kinase. IRS proteins also undergo serine phosphorylation, which regulates its function. Phosphorylation of human IRS-1 at Ser³¹² and Ser⁶¹⁶ (Ser³⁰⁷ and Ser⁶¹² in mouse) results in the impairment of metabolic insulin signaling pathways.

Cellular insulin resistance, which develops as a result of activation of cellular stress pathways by cytokines, causes a decrease in insulin-stimulated tyrosine phosphorylation and an increase of serine phosphorylation of IRS-1. This results in the decreased ability of insulin receptor to phosphorylate tyrosine residues. IRS-1 and IRS-2 have also been implicated in the integrin-dependent activation of PI3 kinase and invasion of carcinoma.³

Reagent

Supplied in Dulbecco's phosphate buffered saline, without Mg²⁺ and Ca²⁺, pH 7.3, containing 50% glycerol, 1.0 mg/ml BSA (IgG, protease free) and 0.05% sodium azide.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazard and safe handling practices.

Storage/Stability

Store at -20 °C. Working dilution samples should be discarded if not used within 12 hours. The antibody is stable for at least 6 months when stored appropriately.

Product Profile

A recommended working dilution of 1:1000 is determined by immunoblotting using a phorbol ester (TPA) treated human embryonic kidney cells or Chinese Hamster Ovary cells expressing human insulin receptor (293T or CHO-T, respectively) and transiently transfected with a plasmid encoding human IRS-1.

Note: In order to obtain best results in different techniques and preparations, we recommend determining optimal working concentration by titration test.

References

1. Gao, Z., et. al., Serine phosphorylation of insulin receptor substrate 1 by inhibitor κB kinase complex. *J. Biol. Chem.*, **277**, 48115-48121 (2002).
2. Aguirre, V., et. al., Phosphorylation of Ser³⁰⁷ in IRS-1 blocks interactions with the insulin receptor and inhibits insulin action. *J. Biol. Chem.*, **277**, 1531-1537 (2002).

3. Greene, M. W. and Garofalo, R. S., Positive and negative regulatory role of insulin receptor substrate 1 and 2 (IRS-1 and IRS-2) serine/threonine phosphorylation. *Biochemistry*, **41**, 7082-7091 (2002).
4. White, M. F., IRS proteins and the common path to diabetes. *Am. J. Physiol. Endocrinol. Metab.*, **283**, E413-E422 (2002).

AH,PHC 02/06-1

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