SANTA CRUZ BIOTECHNOLOGY, INC.

p-MYPT1 (Thr 853): sc-17432

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The Power to Question

BACKGROUND

Myosin phosphatase target subunit 1 (MYPT1), also called Myosin-binding subunit of Myosin phosphatase, is one of the subunits and an integral component of the Myosin phosphatase. Myosin phosphatase regulates the interaction of Actin and Myosin downstream of the guanosine triphosphatase Rho, which inhibits Myosin phosphatase through the action of Rho-kinase. MYPT1 promotor contains one Sp1 transcription factor binding site, suggesting that MYPT1 is a housekeeping gene. Myotonic dystrophy protein kinase phosphorylates MYPT1 at Tyrosine 654 to regulate Myosin II phosphorylation. Inhibition of Myosin light chain phosphatase results in Ca^{2+} sensitization of smooth muscle contraction. This inhibition is modulated through phosphorylation of MYPT1 by a ZIP-like kinase, which associates with MYPTI and phosphorylates the inhibitory site in smooth muscle. The phosphorylation of MYPT1 by protein kinase C results in altered dephosphoryation of Myosin by attenuating the binding of protein phosphatase 1 catalytic subunit (PP1c) and the phosphorylated Myosin light chain to MYPT1. PP1c interacts with at least four binding sties on the amino-terminus of MYPT1. MYPT2, a novel isoform of MYPT1, also interacts with PPlc. MYPT1 is localized on stress fibers; it is distributed close to the cell membrane and at cell-cell contacts to regulate Myosin phosphatase activity.

CHROMOSOMAL LOCATION

Genetic locus: PPP1R12A (human) mapping to 12q21.2; Ppp1r12a (mouse) mapping to 10 D1.

SOURCE

p-MYPT1 (Thr 853) is available as either goat (sc-17432) or rabbit (sc-17432-R) affinity purified polyclonal antibody raised against a short amino acid sequence containing Thr 853 phosphorylated MYPT1 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-17432 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-MYPT1 (Thr 853) is recommended for detection of Thr 853 phosphorylated MYPT1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000). p-MYPT1 (Thr 853) is also recommended for detection of correspondingly phosphorylated MYPT1 in additional species, including equine, canine, porcine and avian.

Suitable for use as control antibody for MYPT1 siRNA (h): sc-37240, MYPT1 siRNA (m): sc-37241, MYPT1 shRNA Plasmid (h): sc-37240-SH, MYPT1 shRNA Plasmid (m): sc-37241-SH, MYPT1 shRNA (h) Lentiviral Particles: sc-37240-V and MYPT1 shRNA (m) Lentiviral Particles: sc-37241-V.

Molecular Weight of p-MYPT1: 130 kDa.

SELECT PRODUCT CITATIONS

1. Pang, H., et al. 2005. RhoA-Rho kinase pathway mediates Thrombin- and U-46619-induced phosphorylation of a myosin phosphatase inhibitor, CPI-17, in vascular smooth muscle cells. Am. J. Physiol., Cell Physiol. 289: C352-C360.
2. Yoneda, A., et al. 2005. The Rho kinases I and II regulate different aspects of Myosin II activity. J. Cell Biol. 170: 443-453.
3. Xie, Z., et al. 2006. Up-regulation of CPI-17 phosphorylation in diabetic vasculature and high glucose cultured vascular smooth muscle cells. Cardiovasc. Res. 69: 491-501.
4. Kolavennu, V., et al. 2008. Targeting of RhoA/ROCK signaling ameliorates progression of diabetic nephropathy independent of glucose control. Diabetes 57: 714-723.
5. Jiang, X., et al. 2010. HGAL, a germinal center specific protein, decreases lymphoma cell motility by modulation of the RhoA signaling pathway. Blood 116: 5217-5227.
6. Mori, D., et al. 2011. Synchronous phosphorylation of CPI-17 and MYPT1 is essential for inducing Ca^{2+} sensitization in intestinal smooth muscle. Neurogastroenterol. Motil. 23: 1111-1122.
7. Kikkawa, Y., et al. 2012. Mechanisms underlying potentiation of endothelin-1-induced myofilament Ca^{2+} sensitization after subarachnoid hemorrhage. J. Cereb. Blood Flow Metab. 32: 341-352.
8. Zeller, K.S., et al. 2013. The role of mechanical force and ROS in integrin-dependent signals. PLoS ONE 8: e64897.
9. Bhetwal, B.P., et al. 2013. Impaired contractile responses and altered expression and phosphorylation of Ca^{2+} sensitization proteins in gastric antrum smooth muscles from ob/ob mice. J. Muscle Res. Cell Motil. 34: 137-149.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.