SANTA CRUZ BIOTECHNOLOGY, INC.

INSIG-1 (A-9): sc-390504

BACKGROUND

INSIG-1 and INSIG-2 play distinct roles in a negative-feedback mechanism for cholesterol synthesis. INSIG-1 is highly expressed in liver and fibroblast cell lines. INSIG-1 localizes to the endoplasmic reticulum (ER) and binds the sterol-sensing domain of SREBP cleavage-activating protein (SCAP). Sterol induces INSIG-1 binding to SCAP. INSIG-2, another ER protein, binds SCAP in a sterol-regulated manner. Thus, INSIG-1 and INSIG-2 block the export of SCAP from the ER and ultimately inhibit cholesterol synthesis by preventing the proteolytic processing of SREBPs by Golgi enzymes. INSIG-1 is encoded by the Insulin-induced gene (INSIG-1). INSIG-1 gene expression is suppressed by oxysterols and restored following the introduction of the hypocholesterolemic agent LY295427. The negative feedback mechanism is absent in mutant CHO cells with a point mutation in one SCAP allele within the sterol-sensing domain. The mutant cells constitutively cleave SREBP in the presence of sterols. The critical role of INSIG-1 and INSIG-2 in cholesterol metabolism may be exploited as a therapeutic effect for hypercholesterolemia.

CHROMOSOMAL LOCATION

Genetic locus: INSIG1 (human) mapping to 7q36.2; Insig1 (mouse) mapping to 5 B1.

SOURCE

INSIG-1 (A-9) is a mouse monoclonal antibody raised against amino acids 31-100 mapping near the N-terminus of INSIG-1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

INSIG-1 (A-9) is available conjugated to agarose (sc-390504 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-390504 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-390504 PE), fluorescein (sc-390504 FITC), Alexa Fluor® 488 (sc-390504 AF488), Alexa Fluor® 546 (sc-390504 AF546), Alexa Fluor® 594 (sc-390504 AF594) or Alexa Fluor® 647 (sc-390504 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-390504 AF680) or Alexa Fluor® 790 (sc-390504 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

INSIG-1 (A-9) is recommended for detection of INSIG-1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

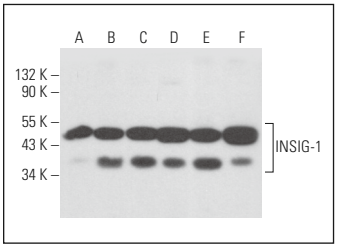
Suitable for use as control antibody for Unc18-2 siRNA (h): sc-42310, INSIG-1 siRNA (m): sc-44433, Unc18-2 shRNA Plasmid (h): sc-42310-SH, INSIG-1 shRNA Plasmid (m): sc-44433-SH, Unc18-2 shRNA (h) Lentiviral Particles: sc-42310-V and INSIG-1 shRNA (m) Lentiviral Particles: sc-44433-V.

Molecular Weight of INSIG-1: 30 kDa.

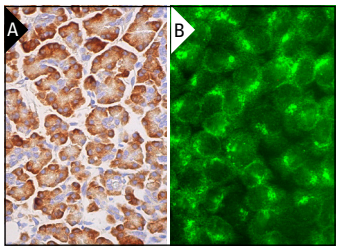
STORAGE

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

DATA



INSIG-1 (A-9): sc-390504. Western blot analysis of INSIG-1 expression in Hep G2 (**A**), A549 (**B**), MCF7 (**C**), HeLa (**D**), Jurkat (**E**) and NIH/3T3 (**F**) whole cell lysates.



INSIG-1 (A-9): sc-390504. Immunoperoxidase staining of formalin fixed, paraffin-embedded human pancreas tissue showing cytoplasmic staining of exocrine glandular cells (**A**). Immunofluorescence staining of formalin-fixed HeLa cells showing cytoplasmic vesicles localization (**B**).

SELECT PRODUCT CITATIONS

1. Han, Y., et al. 2019. Post-translational regulation of lipogenesis via AMPK-dependent phosphorylation of Insulin-induced gene. Nat. Commun. 10: 623.
2. Xu, D., et al. 2020. The gluconeogenic enzyme PCK1 phosphorylates INSIG-1/2 for lipogenesis. Nature 580: 530-535.
3. Chandra, A., et al. 2021. Inhibition of microRNA-128-3p attenuates hypercholesterolemia in mouse model. Life Sci. 264: 118633.
4. Zhao, Z.H., et al. 2021. Sodium butyrate supplementation inhibits hepatic steatosis by stimulating liver kinase B1 and Insulin-induced gene. Cell. Mol. Gastroenterol. Hepatol. 12: 857-871.
5. Watanabe, Y., et al. 2021. Insulin-induced genes INSIG-1 and INSIG-2 mediate oxysterol-dependent activation of the PERK/eIF2α/ATF4 axis. J. Biol. Chem. 297: 100989.
6. Govatati, S., et al. 2021. Novel role of xanthine oxidase-dependent H_2O_2 production in 12/15-lipoxygenase-mediated *de novo* lipogenesis, triglyceride biosynthesis and weight gain. Redox Biol. 47: 102163.
7. White-Gilbertson, S., et al. 2022. Polyploid giant cancer cells are dependent on cholesterol for progeny formation through amitotic division. Sci. Rep. 12: 8971.
8. Wang, Y., et al. 2022. Tim-4 reprograms cholesterol metabolism to suppress antiviral innate immunity by disturbing the Insig1-SCAP interaction in macrophages. Cell Rep. 41: 111738.
9. Yamashita, A., et al. 2023. Depletion of LONP2 unmasks differential requirements for peroxisomal function between cell types and in cholesterol metabolism. Biol. Direct 18: 60.

RESEARCH USE

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