SANTA CRUZ BIOTECHNOLOGY, INC.

p-Akt1/2/3 (11E6): sc-81433

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The serine/threonine kinase Akt family contains several members, including Akt1 (also designated PKB or RacPK), Akt2 (also designated PKBβ or RacPK-β) and Akt3 (also designated PKBγ or thyoma viral proto-oncogene 3), which exhibit sequence homology with the protein kinase A and C families and are encoded by the c-Akt proto-oncogene. All members of the Akt family have a Pleckstrin homology domain. Akt1 and Akt2 are activated by PDGF stimulation. This activation is dependent on PDGFR-β tyrosine residues 740 and 751, which bind the subunit of the phosphatidylinositol 3-kinase (PI 3-kinase) complex. Activation of Akt1 by Insulin or Insulin-growth factor-I (IGF-I) results in phosphorylation of both Thr 308 and Ser 473. Akt proteins become phosphorylated and activated in Insulin/IGF-I-stimulated cells by an upstream kinase(s), and the activation of Akt1 and Akt2 is inhibited by the PI kinase inhibitor Wortmannin. Taken together, this data strongly suggests that the protein signals downstream of the PI kinases. Akt3 is phosphorylated on a serine residue in response to Insulin. However, the activation of Akt3 by Insulin is inhibited by prior activation of protein kinase C via a mechanism that does not require the presence of the PH domain. Akt3 is expressed in 3T3-L1 fibroblasts, adipocytes and skeletal muscle and may be involved in various biological processes, including adipocyte and muscle differentiation, glycogen synthesis, glucose uptake, apoptosis and cellular proliferation.

REFERENCES

1. Burgering, B.M., et al. 1995. Protein kinase B (c-Akt) in phosphatidylinositol-3-OH kinase signal transduction. Nature 376: 599-602.
2. Datta, K., et al. 1995. AH/PH domain-mediated interaction between Akt molecules and its potential role in Akt regulation. Mol. Cell. Biol. 15: 2304-2310.

SOURCE

p-Akt1/2/3 (11E6) is a mouse monoclonal antibody raised against a synthetic phosphopeptide corresponding to amino acid residues surrounding Ser 473 of Akt1 of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 kappa light chain in 0.5 ml of PBS with < 0.1% sodium azide, 0.1% gelatin, PEG and sucrose.

APPLICATIONS

p-Akt1/2/3 (11E6) is recommended for detection of Ser 473 phosphorylated Akt1 and correspondingly Ser 474 phosphorylated Akt2 and correspondingly Ser 472 phosporylated Akt3 of mouse, rat, human and canine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Molecular Weight of p-Akt1: 62 kDa.

Molecular Weight of p-Akt2: 56 kDa.

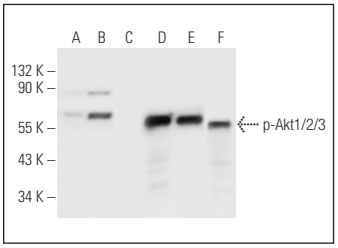
Molecular Weight of p-Akt3: 60 kDa.

Positive Controls: Jurkat + Calyculin A cell lysate: sc-2277.

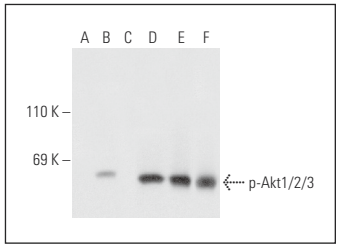
STORAGE

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

DATA



Western blot analysis of Akt1/2/3 phosphorylation in untreated (**A**,**D**), calyculin treated (**B**,**E**) and calyculin and lambda protein phosphatase treated (**C**,**F**) Jurkat whole cell lysates. Antibodies tested include p-Akt1 (11E6): sc-81433 (**A**,**B**,**C**) and p-Akt1/2/3 (C-20): sc-1618 (**D**,**E**,**F**).



Western blot analysis of Akt1/2/3 phosphorylation in untreated (**A**,**D**), serum starved and insulin treated (**B**,**E**) and serum starved, insulin treated and lambda protein phosphatase (sc-200312A) treated (**C**,**F**) HEK293 whole cell lysates. Antibodies tested include p-Akt1/2/3 (11E6): sc-81433 (**A**,**B**,**C**) and Akt1 (C-20): sc-1618 (**D**,**E**,**F**).

SELECT PRODUCT CITATIONS

1. Shen, Z., et al. 2008. The kringle 1 domain of hepatocyte growth factor has antiangiogenic and antitumor cell effects on hepatocellular carcinoma. Cancer Res. 68: 404-414.
2. Kabara, E. and Coussens, P.M. 2012. Infection of primary bovine macrophages with *Mycobacterium avium* subspecies *paratuberculosis* suppresses host cell apoptosis. Front. Microbiol. 3: 215.
3. Wang, X., et al. 2014. MicroRNA-214 regulates osteosarcoma survival and growth by directly targeting phosphatase and tensin homolog. Mol. Med. Rep. 10: 3073-3079.
4. Liu, Q., et al. 2015. SHIP2 on pI3K/Akt pathway in palmitic acid stimulated islet β cell. Int. J. Clin. Exp. Med. 8: 3210-3218.
5. Monica, V., et al. 2016. Dasatinib modulates sensitivity to pemetrexed in malignant pleural mesothelioma cell lines. Oncotarget 7: 76577-76589.
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7. Li, J. and You, X. 2018. MicroRNA-758 inhibits malignant progression of retinoblastoma by directly targeting PAX6. Oncol. Rep. 40: 1777-1786.
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10. Liu, P., et al. 2020. Par6 regulates cell cycle progression through enhancement of Akt/PI3K/GSK-3β signaling pathway activation in glioma. FASEB J. 34: 1481-1496.

RESEARCH USE

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