SANTA CRUZ BIOTECHNOLOGY, INC.

p-Akt1/2/3 (A-12): sc-271964

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 Akt 3 (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-1 (IGF-1) results in phosphorylation of both Thr 308 and Ser 473. Akt proteins become phosphorylated and activated in Insulin/IGF-1-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.

SOURCE

p-Akt1/2/3 (A-12) is a mouse monoclonal antibody epitope corresponding to a short amino acid sequence containing Thr 308 phosphorylated Akt2 of human origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-271964 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

p-Akt1/2/3 (A-12) is recommended for detection of Thr 308 phosphorylated Akt1 and correspondingly Thr 309 phosphorylated Akt2 and correspondingly Thr 305 phosphorylated Akt3 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

p-Akt1/2/3 (A-12) is also recommended for detection of correspondingly phosphorylated Akt1, Akt2 and Akt3 in additional species, including equine and avian.

Molecular Weight of p-Akt1: 62 kDa.

Molecular Weight of p-Akt2: 56 kDa.

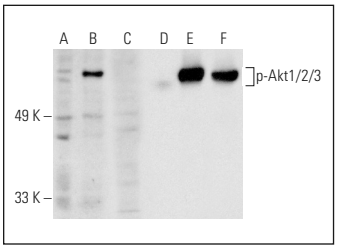
Molecular Weight of p-Akt3: 60 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, Jurkat + calyculin A cell lysate: sc-2277 or Akt1 (h): 293T Lysate: sc-158248.

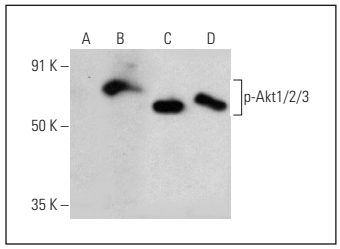
STORAGE

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 phosphorylation in non-transfected: sc-117752 (**A**,**D**), untreated human Akt1 transfected: sc-158248 (**B**,**E**) and lambda protein phosphatase (sc-200312A) treated human Akt1 transfected: sc-158248 (**C**,**F**) 293T whole cell lysates. Antibodies tested include p-Akt1/2/3 (A-12): sc-271964 (**A**-**C**) and Akt1 (C-20): sc-1618 (**D**-**F**).



p-Akt1/2/3 (B-5): sc-514032. Western blot analysis of Akt1/2/3 phosphorylation in Jurkat (**A**,**C**) and calyculin-treated Jurkat (**B**,**D**) whole cell lysates. Antibodies tested include p-Akt1/2/3 (A-12): sc-514032 (**A**,**B**) and Akt1 (B-1): sc-5298 (**C**,**D**).

SELECT PRODUCT CITATIONS

1. Fendri, A., et al. 2009. PIK3CA amplification is predictive of poor prognosis in Tunisian patients with nasopharyngeal carcinoma. Cancer Sci. 100: 2034-2039.
2. Buendia, I., et al. 2015. The melatonin-N,N-dibenzyl(N-methyl)amine hybrid ITH91/IQM157 affords neuroprotection in an *in vitro* Alzheimer's model via hemo-oxygenase-1 induction. ACS Chem. Neurosci. 6: 288-296.
3. Bu, W. and Luo, T. 2017. MiR-1297 promotes cell proliferation of non-small cell lung cancer cells: involving in PTEN/Akt/Skp2 signaling pathway. DNA Cell Biol. 36: 976-982.
4. Chen, Z., et al. 2018. Mn12Ac inhibits the migration, invasion and epithelial-mesenchymal transition of lung cancer cells by downregulating the Wnt/β-catenin and PI3K/Akt signaling pathways. Oncol. Lett. 16: 3943-3948.
5. Luo, A.J., et al. 2019. Suppression of Tescalcin inhibits growth and metastasis in renal cell carcinoma via downregulating NHE1 and NFκB signaling. Exp. Mol. Pathol. 107: 110-117.
6. Chang, L., et al. 2019. MiR-181b-5p suppresses starvation-induced cardiomyocyte autophagy by targeting Hspa5. Int. J. Mol. Med. 43: 143-154.
7. Bao, F., et al. 2019. HIF-α/PKM2 and PI3K-Akt pathways involved in the protection by dexmedetomidine against isoflurane or bupivacaine-induced apoptosis in hippocampal neuronal HT22 cells. Exp. Ther. Med. 17: 63-70.
8. Molagoda, I.M.N., et al. 2020. Anthocyanins from *Hibiscus syriacus* L. inhibit oxidative stress-mediated apoptosis by activating the Nrf2/HO-1 signaling pathway. Antioxidants 9: 42.

RESEARCH USE

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