SANTA CRUZ BIOTECHNOLOGY, INC.

p-Akt1/2/3 (B-12): sc-377556

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 (B-12) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 442-459 Thr 450 of Akt1 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-377556 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

p-Akt1/2/3 (B-12) is recommended for detection of Thr 450 phosphorylated Akt1 and Thr 451 correspondingly phosphorylated Akt2 and Thr 447 correspondingly 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), 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).

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

Molecular Weight of p-Akt1: 62 kDa.

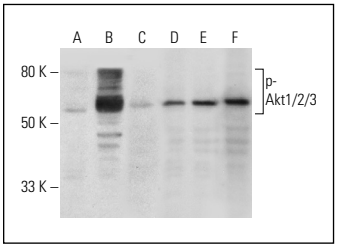
Molecular Weight of p-Akt2: 56 kDa.

Molecular Weight of p-Akt3: 60 kDa.

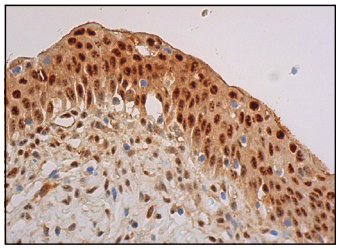
STORAGE

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**), Ser/Thr induction cocktail (sc-362324) treated (**B**,**E**) and Ser/Thr induction cocktail (sc-362324) and lambda protein phosphatase (sc-200312A) treated (**C**,**F**) A-431 whole cell lysates. Antibodies tested include p-Akt1/2/3 (B-12): sc-377556 (**A**,**B**,**C**) and Akt1 (C-20): sc-1618 (**D**,**E**,**F**).



p-Akt1/2/3 (B-12): sc-377556. Immunoperoxidase staining of formalin fixed, paraffin-embedded human urinary bladder tissue showing nuclear and cytoplasmic staining of urothelial cells.

SELECT PRODUCT CITATIONS

1. Liu, A.Y., et al. 2015. Functional characterization of the nitrogen permease regulator-like-2 candidate tumor suppressor gene in colorectal cancer cell lines. Mol. Med. Rep. 12: 3487-3493.
2. Liu, J., et al. 2019. Induction of entosis in prostate cancer cells by nintedanib and its therapeutic implications. Oncol. Lett. 17: 3151-3162.
3. Zhang, X.H., et al. 2020. Heat shock protein 90 relieves heat stress damage of myocardial cells by regulating Akt and PKM2 signaling *in vivo*. Int. J. Mol. Med. 45: 1888-1908.
4. Ren, R., et al. 2020. Phosphoproteome profiling provides insight into the mechanisms of ventilator-induced lung injury. Exp. Ther. Med. 19: 3627-3633.
5. Duan, J., et al. 2021. MiR-152/TNS1 axis inhibits non-small cell lung cancer progression through Akt/mTOR/RhoA pathway. Biosci. Rep. 41: BSR20201539.
6. Lu, Y.A., et al. 2021. Diphlorethohydroxycarmalol isolated from *Ishige okamurae* exerts vasodilatory effects via calcium signaling and PI3K/Akt/eNOS pathway. Int. J. Mol. Sci. 22: 1610.
7. Qin, L., et al. 2021. Chlorogenic acid alleviates hyperglycemia-induced cardiac fibrosis through activation of the NO/cGMP/PKG pathway in cardiac fibroblasts. Mol. Nutr. Food Res. 65: e2000810.
8. Wang, Y., et al. 2021. 23-hydroxytormentic acid reduces cerebral ischemia/reperfusion damage in rats through anti-apoptotic, antioxidant, and anti-inflammatory mechanisms. Naunyn Schmiedebergs Arch. Pharmacol. 394: 1045-1054.

RESEARCH USE

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