SANTA CRUZ BIOTECHNOLOGY, INC.

Na^+/K^+-ATPase α1 (C-5): sc-514661

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The ubiquitously expressed sodium/potassium-ATPase (Na^+/K^+-ATPase) exists as a oligomeric plasma membrane complex that couples the hydrolysis of one molecule of ATP to the importation of three Na^+ ions and two K^+ ions against their respective electrochemical gradients. As a member of the P-type family of ion motives, Na^+/K^+-ATPase plays a critical role in maintaining cellular volume, resting membrane potential and Na^+-coupled solute transport. Multiple isoforms of three subunits, α, β and γ, comprise the Na^+/K^+-ATPase oligomer. The α subunit contains the binding sites for ATP and the cations; the glycosylated β subunit ensures correct folding and membrane insertion of the α subunits. The small γ subunit co-localizes with the α subunit in nephron segments, where it increases the affinity of Na^+/K^+-ATPase for ATP. The β subunit, but not the γ subunit, is essential for normal activity of Na^+/K^+-ATPase.

REFERENCES

1. Hardwicke, P.M., et al. 1981. A proteolipid associated with Na^+/K^+-ATPase is not essential for ATPase activity. Biochem. Biophys. Res. Commun. 102: 250-257.
2. Ackermann, U., et al. 1990. Mutual dependence of Na^+/K^+-ATPase α- and β-subunits for correct post-translational processing and intracellular transport. FEBS Lett. 269: 105-108.
3. McDonough, A.A., et al. 1990. The sodium pump needs its β subunit. FASEB J. 4: 1598-1605.
4. Pedemonte, C.H., et al. 1990. Chemical modification as an approach to elucidation of sodium pump structure-function relations. Am. J. Physiol. 258: C1-C23.
5. Mercer, R.W., et al. 1993. Molecular cloning and immunological chracterization of the γ polypeptide, a small protein associated with Na,K-ATPase. J. Cell Biol. 121: 579-586.
6. DeTomaso, A.W., et al. 1993. Expression, targeting, and assembly of functional Na,K-ATPase polypeptides in baculovirus-infected insect cells. J. Biol. Chem. 268: 1470-1478.

CHROMOSOMAL LOCATION

Genetic locus: ATP1A1 (human) mapping to 1p13.1; Atp1a1 (mouse) mapping to 3 F2.2.

SOURCE

Na^+/K^+-ATPase α1 (C-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 54-77 near the N-terminus of Na^+/K^+-ATPase α1 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-514661 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

Na^+/K^+-ATPase α1 (C-5) is recommended for detection of Na^+/K^+-ATPase α1 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).

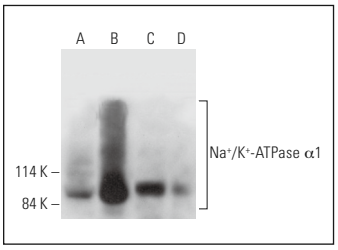
Na^+/K^+-ATPase α1 (C-5) is also recommended for detection of Na^+/K^+-ATPase α1 in additional species, including canine.

Suitable for use as control antibody for Na^+/K^+-ATPase α1 siRNA (h): sc-36010, Na^+/K^+-ATPase α1 siRNA (m): sc-36011, Na^+/K^+-ATPase α1 shRNA Plasmid (h): sc-36010-SH, Na^+/K^+-ATPase α1 shRNA Plasmid (m): sc-36011-SH, Na^+/K^+-ATPase α1 shRNA (h) Lentiviral Particles: sc-36010-V and Na^+/K^+-ATPase α1 shRNA (m) Lentiviral Particles: sc-36011-V.

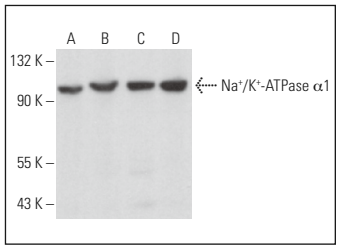
Molecular Weight of Na^+/K^+-ATPase α1: 100 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, human kidney extract: sc-363764 or MDCK cell lysate: sc-2252.

DATA



Na^+/K^+-ATPase α1 (C-5): sc-514661. Western blot analysis of Na^+/K^+-ATPase α1 expression in HeLa (**A**) and MDCK (**B**) whole cell lysates and human kidney (**C**) and human brain (**D**) tissue extracts.



Na^+/K^+-ATPase α1 (C-5): sc-514661. Western blot analysis of Na^+/K^+-ATPase α1 expression in HeLa (**A**), Neuro-2A (**B**), RAW 264.7 (**C**) and 3T3-L1 (**D**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Su, Q., et al. 2022. Na^+/K^+-ATPase α 2 isoform elicits Rac1-dependent oxidative stress and TLR4-induced inflammation in the hypothalamic paraventricular nucleus in high salt-induced hypertension. Antioxidants 11: 288.

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.

CONJUGATES

See **Na^+/K^+-ATPase α1 (C464.6): sc-21712** for Na^+/K^+-ATPase α1 antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.