SANTA CRUZ BIOTECHNOLOGY, INC.

Na^+/K^+-ATPase β1 (3C115): sc-71635

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The ubiquitously expressed sodium/potassium-ATPase (Na^+/K^+-ATPase) exists as an 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 to form 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 posttranslational 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.
7. Scheiner-Bobis, G., et al. 1994. Subunit requirements for expression of functional sodium pumps in yeast cells. Biochim. Biophys. Acta 1193: 226-234.

CHROMOSOMAL LOCATION

Genetic locus: ATP1B1 (human) mapping to 1q24.2; Atp1b1 (mouse) mapping to 1 H2.2.

SOURCE

Na^+/K^+-ATPase β1 (3C115) is a mouse monoclonal antibody raised against purified rabbit renal outer medulla, epitope maps to an external domain of the β1 subunit.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Na^+/K^+-ATPase β1 (3C115) is recommended for detection of Na^+/K^+-ATPase β1 of mouse, rat, human, rabbit and canine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for Na^+/K^+-ATPase β1 siRNA (h): sc-36008, Na^+/K^+-ATPase β1 siRNA (m): sc-36009, Na^+/K^+-ATPase β1 shRNA Plasmid (h): sc-36008-SH, Na^+/K^+-ATPase β1 shRNA Plasmid (m): sc-36009-SH, Na^+/K^+-ATPase β1 shRNA (h) Lentiviral Particles: sc-36008-V and Na^+/K^+-ATPase β1 shRNA (m) Lentiviral Particles: sc-36009-V.

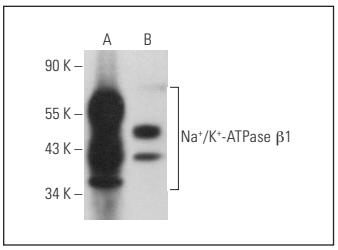
Molecular Weight of Na^+/K^+-ATPase β1: 40-60 kDa.

Positive Controls: MDCK cell lysate: sc-2252, rat brain extract: sc-2392 or Caki-1 cell lysate: sc-2224.

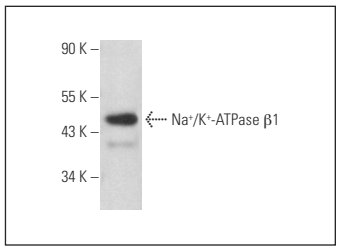
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



Na^+/K^+-ATPase β1 (3C115): sc-71635. Western blot analysis of Na^+/K^+-ATPase β1 expression in MDCK whole cell lysate (**A**) and rat brain tissue extract (**B**).



Na^+/K^+-ATPase β1 (3C115): sc-71635. Western blot analysis of Na^+/K^+-ATPase β1 expression in Caki-1 whole cell lysate.

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.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.