

Na⁺/K⁺ ATPase β4 (I-13): sc-168697

BACKGROUND

The ubiquitously expressed sodium/potassium-ATPase (Na⁺/K⁺-ATPase) is an oligomeric plasma membrane complex that couples the hydrolysis of one molecule of ATP to the import 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, designated α, β and γ, comprise the Na⁺/K⁺-ATPase oligomer. The α subunit contains the binding sites for ATP and the cations, while 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. Na⁺/K⁺ ATPase β4, also known as ATP1B4 or X,K-ATPase subunit β-m, is a 357 amino acid protein that is highly expressed in skeletal muscle and exists as 2 alternatively spliced isoforms.

REFERENCES

1. 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.
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. Pressley, T.A. 1996. Structure and function of the Na,K pump: ten years of molecular biology. *Miner. Electrolyte Metab.* 22: 264-271.
4. Stengelin, M.K., et al. 1997. Na,K-ATPase subunit isoforms in human reticulocytes: evidence from reverse transcription-PCR for the presence of α1, α3, β2, β3, and γ. *Proc. Natl. Acad. Sci. USA* 94: 5943-5948.
5. Avila, J., et al. 1998. Structure and expression of the human Na,K-ATPase β2-subunit gene. *Gene* 208: 221-227.
6. Pestov, N.B., et al. 1999. Identification of a novel gene of the X,K-ATPase β-subunit family that is predominantly expressed in skeletal and heart muscles. *FEBS Lett.* 456: 243-248.

CHROMOSOMAL LOCATION

Genetic locus: ATP1B4 (human) mapping to Xq24; Atp1b4 (mouse) mapping to X A3.3.

SOURCE

Na⁺/K⁺ ATPase β4 (I-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an extracellular domain of Na⁺/K⁺ ATPase β4 of human origin.

PRODUCT

Each vial contains 200 μg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-168697 P, (100 μg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Na⁺/K⁺ ATPase β4 (I-13) is recommended for detection of Na⁺/K⁺ ATPase β4 of mouse, rat and human 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)], 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); non cross-reactive with other Na⁺/K⁺ ATPase β family members.

Na⁺/K⁺ ATPase β4 (I-13) is also recommended for detection of Na⁺/K⁺ ATPase β4 in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Na⁺/K⁺ ATPase β4 siRNA (h): sc-90979, Na⁺/K⁺ ATPase β4 siRNA (m): sc-149790, Na⁺/K⁺ ATPase β4 shRNA Plasmid (h): sc-90979-SH, Na⁺/K⁺ ATPase β4 shRNA Plasmid (m): sc-149790-SH, Na⁺/K⁺ ATPase β4 shRNA (h) Lentiviral Particles: sc-90979-V and Na⁺/K⁺ ATPase β4 shRNA (m) Lentiviral Particles: sc-149790-V.

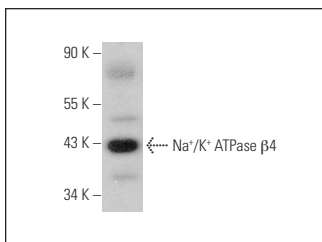
Molecular Weight of Na⁺/K⁺ ATPase β4 isoforms: 42/41 kDa.

Positive Controls: human adipose tissue extract: sc-363750.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 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 donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



Na⁺/K⁺ ATPase β4 (I-13): sc-168697. Western blot analysis of Na⁺/K⁺ ATPase β4 expression in human adipose tissue extract.

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.