SANTA CRUZ BIOTECHNOLOGY, INC.

NKCC2 (4H4): sc-293222

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Na-K-Cl cotransporters (NKCC) are channel proteins that aid in the transcellular movement of chloride across both secretory and absorptive epithelia. NKCC1 is expressed in muscle cells, neurons, and red blood cells. In the basolateral membrane of secretory epithelia, NKCC1 mediates active chloride secretion. The gene encoding human NKCC1 maps to chromosome 5q23.3. In mice, disruption of the NKCC1 gene leads to deafness and impaired balance. NKCC2 is specifically expressed in the kidney where it mediates active reabsorption of sodium chloride in the thick ascending limb of the loop of Henle. NKCC2 is sensitive to the clinically important diuretics furosemide and bumetanide. The gene encoding human NKCC2 maps to chromosome 15q21.1 and mutations in this gene lead to Bartter's syndrome, an inherited hypokalaemic alkalosis. NCCT is a thiazide-sensitive Na-Cl cotransporter that is primarily expressed in the distal convoluted tubule of the kidney where it accounts for a significant fraction of net renal sodium reabsorption. The gene for human NCCT map to chromosome 16q13. Mutations in the gene encoding NCCT cause Gitelman's syndrome, a subset of Bartter's syndrome.

REFERENCES

1. Xu, J.C., et al. 1994. Molecular cloning and functional expression of the bumetanide-sensitive Na-K-Cl cotransporter. Proc. Natl. Acad. Sci. USA 91: 2201-2205.
2. Payne, J.A., et al. 1995. Primary structure, functional expression, and chromosomal localization of the bumetanide-sensitive Na-K-Cl cotransporter in human colon. J. Biol. Chem. 270: 17977-17985.
3. Quaggin, S.E., et al. 1995. Localization of the renal Na-K-Cl cotransporter gene (Slc12a1) on mouse chromosome 2. Mamm. Genome 6: 557-558.
4. Simon, D.B., et al. 1996. Gitelman's variant of Bartter's syndrome, inherited hypokalaemic alkalosis, is caused by mutations in the thiazide-sensitive Na-Cl cotransporter. Nat. Genet. 12: 24-30.
5. Mastroianni, N., et al. 1996. Molecular cloning, expression pattern, and chromosomal localization of the human Na-Cl thiazide-sensitive cotransporter (SLC12A3). Genomics 35: 486-493.
6. Mastroianni, N., et al. 1996. Novel molecular variants of the Na-Cl cotransporter gene are responsible for Gitelman syndrome. Am. J. Hum. Genet. 59: 1019-1026.
7. Delpire, E., et al. 1999. Deafness and imbalance associated with inactivation of the secretory Na-K-2Cl co-transporter. Nat. Genet. 22: 192-195.

CHROMOSOMAL LOCATION

Genetic locus: SLC12A1 (human) mapping to 15q21.1.

SOURCE

NKCC2 (4H4) is a mouse monoclonal antibody raised against amino acids 80-172 of NKCC2 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

NKCC2 (4H4) is recommended for detection of NKCC2 of 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)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for NKCC2 siRNA (h): sc-42517, NKCC2 shRNA Plasmid (h): sc-42517-SH and NKCC2 shRNA (h) Lentiviral Particles: sc-42517-V.

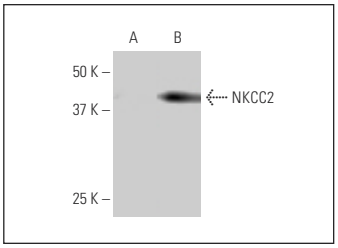
Molecular Weight of NKCC2: 121 kDa.

Positive Controls: NKCC2 transfected 293T whole cell lysate.

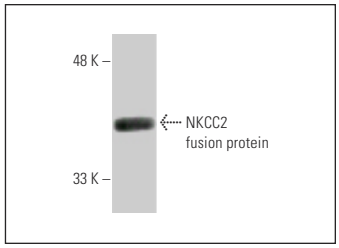
RECOMMENDED SUPPORT REAGENTS

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).

DATA



NKCC2 (4H4): sc-293222. Western blot analysis of NKCC2 expression in non-transfected (**A**) and NKCC2 transfected (**B**) 293T whole cell lysates.



NKCC2 (4H4): sc-293222. Western blot analysis of human recombinant NKCC2 fusion protein.

SELECT PRODUCT CITATIONS

1. Xue, J., et al. 2022. NHE3 in the thick ascending limb is required for sustained but not acute furosemide-induced urinary acidification. Am. J. Physiol. Renal Physiol. 323: F141-F155.

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.