

KCC2a (S-14): sc-139369

BACKGROUND

Nitric oxide (NO) donors activate KCCs, while inhibitors of the cGMP pathway prevent NO donor activation. KCC2 expression is limited to neuronal tissues by a restrictive element similar to the neuronal-restrictive silencing factor. In neurons, KCC2 expression is correlated with an inhibitory response to GABA, while the absence of KCC2 is necessary for an unusual excitatory response to GABA. Alterations of KCC2 expression in the inferior colliculus of rat brain may be related to seizure susceptibility. KCC2a, also known as SLC12A5 (solute carrier family 12 member 5), is a 1,139 amino acid multi-pass membrane protein that belongs to the SLC12A transporter family. Detected in neuronal cells, KCC2a is brain specific and may mediate electroneutral potassium-chloride cotransport. KCC2a is inhibited by furosemide and bumetanide, and exists as a homomultimer and heteromultimer with other K-Cl cotransporters.

REFERENCES

1. Mount, D.B., et al. 1999. Cloning and characterization of KCC3 and KCC4, new members of the cation-chloride cotransporter gene family. *J. Biol. Chem.* 274: 16355-16362.
2. Lauf, P.K., et al. 2000. K-Cl cotransport: properties and molecular mechanism. *Cell. Physiol. Biochem.* 10: 341-354.
3. Lauf, P.K., et al. 2001. K-Cl cotransport: immunohistochemical and ion flux studies in human embryonic kidney (HEK293) cells transfected with full-length and C-terminal-domain-truncated KCC1 cDNAs. *Cell. Physiol. Biochem.* 11: 143-160.
4. Karadsheh, M.F., et al. 2001. Neuronal restrictive silencing element is found in the KCC2 gene: molecular basis for KCC2-specific expression in neurons. *J. Neurophysiol.* 85: 995-997.
5. Song, L., et al. 2002. Molecular, functional, and genomic characterization of human KCC2, the neuronal K-Cl cotransporter. *Brain Res. Mol. Brain Res.* 103: 91-105.
6. Hartmann, A.M., et al. 2010. Differences in the large extracellular loop between the K⁺-Cl⁻ cotransporters KCC2 and KCC4. *J. Biol. Chem.* 285: 23994-24002.
7. Cruz-Rangel, S., et al. 2011. Similar effects of all WNK3 variants on SLC12 cotransporters. *Am. J. Physiol., Cell Physiol.* 301: C601-C608.
8. Shimizu-Okabe, C., et al. 2011. KCC2 was downregulated in small neurons localized in epileptogenic human focal cortical dysplasia. *Epilepsy Res.* 93: 177-184.

CHROMOSOMAL LOCATION

Genetic locus: SLC12A5 (human) mapping to 20q13.12; Slc12a5 (mouse) mapping to 2 H3.

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.

SOURCE

KCC2a (S-14) is an affinity purified rabbit polyclonal antibody raised against a peptide mapping within an N-terminal cytoplasmic domain of KCC2 of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-139369 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

KCC2a (S-14) is recommended for detection of Isoform KCC2a of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:50-1:500), immunofluorescence (starting dilution 1:25, dilution range 1:25-1:250) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); non cross-reactive with isoform KCC2b; non cross-reactive with KCC1, KCC3 or KCC4.

KCC2a (S-14) is also recommended for detection of Isoform KCC2a in additional species, including equine, bovine and porcine.

Suitable for use as control antibody for KCC2 siRNA (h): sc-42606, KCC2 siRNA (m): sc-42607, KCC2 shRNA Plasmid (h): sc-42606-SH, KCC2 shRNA Plasmid (m): sc-42607-SH, KCC2 shRNA (h) Lentiviral Particles: sc-42606-V and KCC2 shRNA (m) Lentiviral Particles: sc-42607-V.

Molecular Weight of KCC2a: 126 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

PROTOCOLS

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