

KCC2 (R-14): sc-19420

BACKGROUND

The four isoforms of potassium/chloride co-transport channels (KCC) belong to a superfamily of cation-chloride co-transporters involved in cell volume maintenance. Nitric oxide (NO) donors activate KCCs, while inhibitors of the cGMP pathway prevent NO donor activation. The ubiquitously expressed KCC1 contains 12 transmembrane domains with both cytoplasmic N- and C-terminal domains. 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. Conversely, KCC3 is not suspected to play a major role in epilepsy. The two splice variants of KCC3, KCC3 α and KCC3 β , are predominantly expressed in brain and kidney, respectively, while KCC4 is expressed in muscle, brain, lung, heart and kidney.

REFERENCES

1. Mount, D.B., et al. 1999. Cloning and characterization of KCC3 and KCC4, new members of the cation-chloride co-transporter gene family. *J. Biol. Chem.* 274: 16355-16362.
2. Lauf, P.K. and Adragna, N.C. 2000. K-Cl co-transport: properties and molecular mechanism. *Cell. Physiol. Biochem.* 10: 341-354.
3. Di Fulvio, M., et al. 2001. Protein kinase G regulates potassium chloride co-transporter-3 expression in primary cultures of rat vascular smooth muscle cells. *J. Biol. Chem.* 276: 21046-21052.
4. Lauf, P.K., et al. 2001. K-Cl co-transport: 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.* 281: 670-680.
5. Karadshah, 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.

CHROMOSOMAL LOCATION

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

SOURCE

KCC2 (R-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of KCC2 of human origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-19420 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

RESEARCH USE

For research use only, not for use in diagnostic procedures.

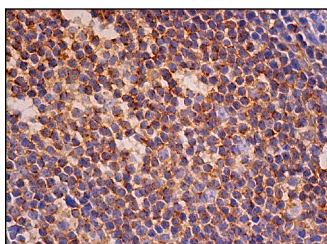
APPLICATIONS

KCC2 (R-14) is recommended for detection of KCC2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

KCC2 (R-14) is also recommended for detection of KCC2 in additional species, including equine, canine, 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.

DATA



KCC2 (R-14): sc-19420. Immunoperoxidase staining of formalin fixed, paraffin-embedded human lymph node tissue showing cytoplasmic staining of cells in germinal and non-germinal centers.

SELECT PRODUCT CITATIONS

1. Gilbert, D., et al. 2007. Differential maturation of chloride homeostasis in primary afferent neurons of the somatosensory system. *Int. J. Dev. Neurosci.* 25: 479-489.
2. Funk, K., et al. 2008. Modulation of chloride homeostasis by inflammatory mediators in dorsal root ganglion neurons. *Mol. Pain* 4: 32.
3. Li, X., et al. 2008. Long-term expressional changes of Na⁺-K⁺-Cl⁻ co-transporter 1 (NKCC1) and K⁺-Cl⁻ co-transporter 2 (KCC2) in CA1 region of hippocampus following lithium-pilocarpine induced status epilepticus (PISE). *Brain Res.* 1221: 141-146.
4. Wu, J., et al. 2008. GABA_A receptor-mediated excitation in dissociated neurons from human hypothalamic hamartomas. *Exp. Neurol.* 213: 397-404.
5. Lee, H.A., et al. 2010. Possible involvement of DNA methylation in NKCC1 gene expression during postnatal development and in response to ischemia. *J. Neurochem.* 114: 520-529.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.