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| Cat. # NCKX31-P | Human NCKX3 control/blocking Peptide #1 | SIZE: 100 ug/ |
| Cat. # NCKX31-S | Rabbit Anti-Human NCKX3 antiserum #1 | SIZE: 100 ul |
| Cat. # NCKX31-A | Rabbit Anti-Human NCKX3 IgG #1 (aff pure) | SIZE: 100 ug |

Ca²⁺ plays a critical role in intracellular signaling. Intracellular Ca²⁺ levels are tightly controlled by continuous removal of Ca²⁺ via ATP-driven **Ca²⁺ pump** in the endoplasmic reticulum and plasma membrane, and the **Na⁺/Ca²⁺ exchangers (NCX)**, in the plasma membrane. NCX can move Ca²⁺ either into or out of cells, depending on the net Na⁺, Ca²⁺, and K⁺ gradient across the membrane. In most cells, 3 Na⁺ are exchanged for 1 Ca²⁺. Several genes code for the 3 **NCX (NCX1, NCX2, and NCX3)**, and three in the **NCKX family (NCKX1, NCKX2, NCKX3)**. NCX share significant sequence homology (~70%), display 11 TM domains, a large central, intracellular hydrophilic regulatory loop between TM5 and 6, extracellular N-terminus and cytoplasmic C-terminus. The N-terminal signal peptide is cleaved off from the mature exchanger protein.

In vertebrate photoreceptors, some neurons, and certain other cells, 3 K⁺ are transported in the same direction as Ca²⁺, with coupling ratio of 4 Na⁺ to 1 Ca²⁺ plus 1 K⁺ by new class of exchangers called **NCKX for K⁺-dependent Na/Ca²⁺ exchangers**. NCKX share the general topology and functional properties of NCX proteins. Rod exchangers also contains a large hydrophilic segment at the its N-terminus that is not found in NCX. **NCKX1** (human 1099/1081 aa, bovine 1199 aa) is expressed in retinal rod cells. **NCKX2** (rat 670 aa) shares 80% identity with NCKX1. The two hydrophilic loops are also much shorter in NCKX2 than in NCKX1, accounting largely for the difference between the size of the two proteins. NCKX2 is expressed in various regions of the brain (striatum, parietal cortex, cerebellum, hippocampus, and thalamus). A third member of NCKX family, namely **NCKX3** (rat 624 aa, mouse 595, and human 644/625) has been cloned and characterized. Human NCKX3 is most abundant in the brain (thalamic nuclei, hippocampal CA1 neurons, layer IV of the cerebral cortex). It is also expressed at lower levels in aorta, uterus, and intestine.

FUNCTION: Transports 1 Ca(2+) and 1 K(+) in exchange for 4 Na(+).
SUBCELLULAR LOCATION: Membrane; Multi-pass membrane protein.
SIMILARITY: Belongs to the sodium/potassium/calcium exchanger family. SLC24A subfamily.

Protein name Sodium/potassium/calcium exchanger 4 [Precursor]
Synonyms Na(+)/K(+)/Ca(2+)-exchange protein 4
 Solute carrier family 24 member 4
Gene name Name: SLC24A4
 Synonyms: NCKX4

Source of Antigen and Antibodies

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| Antigen | 16aa peptide of Human NCKX3/ SLC24A4 (protein accession #Q8NFF2 , refs 1) ; Designated (NCKX31-P or control peptide) .conjugated to KLH; Epitopelocation~C-terminal, Extracellular |
| Ab Host/type | Rabbit, polyclonal Unpurified antiserum (cat #NCKX31-S) Aff pure IgG (cat #NCKX31-A) |
| 2-ab | Cat # 20320, goat anti-rabbit IgG-HRP (AP, biotin, FITC conjugates also available |
| -ve control | # 20009-1, Rabbit (non-immune) IgG, purified, suitable for ELISA, Western, IHC as -ve control |

Form & Storage of Antibodies/Peptide Control

Antiserum (unpurified)

100ul solution lyophilized powder
 Supplied in Buffer: 0.05% azide
Reconstitute powder in 100 ul PBS

Affinity pure IgG

100 ug/100ul solution lyophilized powder
 Supplied in **Buffer:** PBS+0.1% BSA
Reconstitute powder in PBS at 1mg/ml

Control/blocking peptide

100 ug/100 ul solution lyophilized powder
 Supplied in Buffer: PBS pH 7.5,
Reconstitute powder in PBS at 1 mg/ml.

Storage

Short-term: unopened, undiluted liquid vials at -20OC and powder at 4oC or -20oC..

Long-term: at -20C or below in suitable aliquots after reconstitution. Do not freeze and thaw and store working, diluted solutions.

Stability: 6-12 months at -20oC or below.

Recommended Usage

Western Blotting (1:1K-5K for neat serum and 1-10 ug/ml for affinity pure antibody using ECL technique).

ELISA: Control peptide can be used to coat ELISA plates at 1 ug/ml and detected with antibodies (1:10-50K for neat serum and 0.5-1 ug/ml for affinity pure).

Histochemistry & Immunofluorescence: Not tested. We recommend the use of affinity purified antibody at 5-20 ug/ml in paraformaldehyde fixed sections of tissues.

Specificity & Cross-reactivity

The human NCKX31-P peptide is 100% conserved in mouse and rat NCKX3. It has no appreciable homology with human NCKX1-2 or other NCXs. Antibody cross-reactivity in various species has not been studied. Control peptide, because of its low mol. Wt (<3 kDa), is not suitable for Western. It should be used for ELISA or antibody blocking experiments (use 5-10 ug control peptide per 1 ug of aff pure IgG or 1 ul antiserum) to confirm antibody specificity (see detailed protocol at: www.4adi.com/data/abblock.html).

General References:

(1). Kraev A et al (2001) JBC 276, 23161-23172; Deloukas P et al (2001) Nature 414, 865-871

*This product is for In vitro research use only.

Related material available from ADI

Antibodies NCX1-3/NCKX1-3, CLC1-7/CLC-K1; KCC1-3; AQP1-9 and RUT; OCT1-3, OAT1-3, AE1-4, and NCKX1-3, NaPi-1-III, and NBC1-5 1-3, NHE1-5

Study **distribution of proteins in kidney** in 7 discrete region of rat kidney using pre-made protein blots.

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