

Na⁺-coupled dicarboxylate transporters (NADC1) Antibodies

Cat # NADC11-P	Mouse NADC1 control peptide #1	SIZE: 100 ug
Cat # NADC11-A	Rabbit Anti-mouse NADC1 IgG # 1 (aff pure)	SIZE: 100 ug

The sodium-dicarboxylate cotransporters (Solute carrier family 13), which transport succinate and other Krebs cycle intermediates, fall into 2 categories based on their substrate affinity, low affinity and high affinity. Both the low- and high-affinity transporters play an important role in the handling of citrate by the kidneys. The two different Na⁺-coupled dicarboxylate transporters (**NADC**) have been identified in mammalian tissues. These are **NADC1** and **NADC3** (NADC2 is found in *C. Elegans*). NADC1 is Na⁺-coupled, electrogenic, and exhibits low affinity for its dicarboxylate substrates. This isoform is expressed primarily in the brush border membrane of intestinal and renal epithelial cells. The physiological function of NADC1 is to absorb the intermediates of the citric acid cycle, such as citrate, succinate, α-ketoglutarate, fumarate, and malate, in the intestine and kidney. NADC3 is also a Na⁺-coupled and electrogenic dicarboxylate transporter, but it exhibits relatively higher affinity for its substrates compared with NADC1. The NADC3 is expressed primarily in the basolateral membrane of intestinal and renal epithelial cells. However, it is also found in tissues such as liver, placenta, and brain. NADC3 in the kidney is involved in generating the driving force for the organic anion transporter OAT1 to facilitate the active entry of organic anions into the tubular cells across the basolateral membrane. In the brain, NADC3 mediates the cellular uptake of N-acetylaspartate, a process closely linked to myelination. Therefore, the physiological functions of the NADCs may extend beyond the mediation of cellular entry of citric acid cycle intermediates. Recently, a third member of this family in mammals has been identified, Na⁺-coupled citrate transporter (**NACT**), mediates the cellular uptake of citrate in a Na⁺-coupled manner.

NADC-1, (SLC13A2 gene) is involved in a sodium dicarboxylate cotransport, an electrogenic process, coupling 3 sodium ions to the transport of each divalent anion substrate. NADC-1 is a 586aa protein in mouse, 587aa in rat and 592aa in human (chr 17p11.1-q11.1). In vitro translation of human NADC-1 produced an approximately 48kD protein. The deduced aa sequence of human NADC-1 is 78% identical to rabbit NADC-1 and 47% to rat sodium sulfate transporter. NADC-1 transporter is a low affinity, sodium dependent, and pH-insensitive transporter of succinate, its transport of citrate is stimulated by acidic pH.

Source of Antigen and Antibodies

Antigen	15aa peptide of mouse NADC-1 ; Designed (NADC11-P or control peptide) conjugated to KLH, epitope location ~ C-terminal
Ab Host/type	Rabbit, polyclonal Aff pure IgG1 (cat #NADC11-A)
2-ab	Goat Anti-rabbit IgG-HRP cat # 20320 (AP, biotin, FITC conjugates also available)
-ve control IgG	# 20009-1, Rabbit (non-immune) IgG, purified, suitable for ELISA, Western, IHC as -ve control

Form & Storage of Antibodies/Peptide Control

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 -200C 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.

Shipping: 4oC for solutions and room temp for powder

Recommended Usage

Western Blotting (1-10 ug/ml for affinity pure antibody using Chemiluminescence technique.

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

Histochemistry & Immunofluorescence: not tested. we recommend the use of affinity purified antibody at 2-10 ug/ml in paraformaldehyde fixed sections of tissues.

Specificity & Cross-reactivity

The 15 AA mouse NADC11-P peptide is 92% conserved in rat. 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 .

General References: 1 Mann, S. S et al (1999) Cytogenet. Cell Genet. 84: 89-90; Pajor, A. M (1996) J Physiology, 270: F642-48; Rogina, B et al (2000) Science 290: 2137-2140.

*This product is for In vitro research use only.

Related material available from ADI

Antibodies for NACD 1&3, NACT.

Western blot Recycling kit (probe same blot with multiple antibodies)

NADC11-A-P 80529A