

Product Specification Sheet

Na⁺-HCO₃⁻ cotransporters (NBC1/pNBC) Antibodies

Cat. NBC12-S	Rabbit Anti-Rat NBC1/pNBC antiserum # 2	SIZE: 100 ul
Cat. NBC12-A	Rabbit Anti-Rat NBC1/pNBC IgG # 2 (aff pure)	SIZE: 100 ug
Cat. NBC12-P	Rat NBC1/pNBC Control peptide # 2	SIZE: 100 ug

Bicarbonate, along with CO₂, is the major pH buffer of biological fluids. A great majority of HCO₃⁻ reabsorption occurs via trans-cellular coupling of the luminal Na⁺-H⁺-exchanger 3 and Na⁺-H⁺-ATPase with the basolateral **Na⁺-HCO₃⁻ cotransporters (NBC)**. Several related proteins constitute the emerging NBC family (**NBC1-3**) of membrane cotransporters that are found in a variety of epithelial and non-epithelial tissues, and may be tissue specific. Physiologically, NBC is electrogenic, Na⁺ and HCO₃⁻-dependent, Cl⁻ independent, and inhibited by stilbenes (DIDS and SITS). The NBC family of proteins are 30-35% related to anion exchangers (**AE2 and AE3; SLC4A1-SLC4A3**) and display the same protein topology: (a) At least 10 TM domains with both the N and C-termini predicted to be intracellular, (b) presence of a large, glycosylated, extracellular loop between TM5 and TM6; and (c) the lysine residues are conserved at predicted DIDS-reactive sites.

NBC1 (human, rat, mouse 1035 aa, also called **NBC-1A/1B, hkNBC, rkNBC, pNBC, hhNBC, SLC4A4**) was initially cloned from human Kidney. NBC1 is 30-35% identical with AEs. It is strongly expressed in the kidney and pancreas. The rat kidney NBC1 (rkNBC1; 1035 aa) is 86% identical to hkNBC1. **Pancreatic NBC (pNBC/hhNBC/SLC4A5, human 1079 aa)** has a unique n-terminal 85 aa sequence replacing the 41-aa in kNBC. pNBC is also more widely expressed (pancreas, thyroid, heart, and brain).

Source of Antigen and Antibodies

Antigen	20-aa peptide from rat NBC1 (1); Designation (#NBC12-P, control/blocking peptide) conjugated to KLH; Epitope location ~ C-terminal, Cytoplasmic domain
Ab Host/type	Rabbit, Polyclonal unpurified antiserum (#NBC12-S) and IgG, purified over antigen-agarose (Cat # NBC12-A)
2-Ab	Cat # 20320, goat anti-rabbit IgG-HRP (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

Antiserum (unpurified)
100ul solution lyophilized powder
Supplied 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 -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 using ECL technique. (see published refs using this antibody in 2).

ELISA (1:10K-1:100K; using 50-100 ng of control peptide/well).

Histochemistry & Immunofluorescence: Not tested. We recommend the use of affinity purified antibody at 2-20 ug/ml in formaldehyde fixed tissue.

Specificity & Cross-reactivity

Rat NBC12-P sequence is 100% conserved in mouse, 85% in human, and 80% in rabbit and frog NBC1/PSLC4A4/kNBC. This region is also shared 100% with mouse pNBC/PSLC4A5. Therefore, antibodies will recognize both the kidney and pancreatic/heart isoforms. No significant sequence homology of NBC12-P was found with NBC2 or NBC3. Antibody crossreactivity in various species is not established. 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 the web site).

General References: Romero MF (1998) AJP 274, F425-F432
Burnham CE (1998) gene accession # AF027362; Burnham CE (1997) JBC 272, 19111-19114; Abuladze N (1998) JBC 273; 17689-17695; Solemani M (2000) Kidney Intl. 57, 371-384 (review); Romero MF & Boron WF (1999) Ann. Rev. Physiol. 61, 699-723

(2) Citations of ADI's Antibodies (see web site for updated list)

Velic A 2004 Am. Soc. Nephrol., 15: 967 - 977 WB?
Robey RB 2002 Journal of Membrane Biology WB

*This product is for in vitro research use only.

NBC12-S-A-P 71209A