

**Product Specification Sheet**

**Na<sup>+</sup>/H<sup>+</sup> Exchanger 1 (NHE1) Antibodies**

<b>Cat.</b> NHE12-S	Chicken Anti-Rat NHE1 (Antiserum # 2)	<b>SIZE:</b> 100 ul
<b>Cat.</b> NHE12-A	Chicken Anti-Rat NHE1 (affinity pure) Ig G# 2	<b>SIZE:</b> 100 ug
<b>Cat.</b> NHE12-P	Rat NHE1 control/blocking peptide	<b>SIZE:</b> 100 ug

Na<sup>+</sup>/H<sup>+</sup> exchangers (**NHE**) of mammalian cells are plasma membrane intrinsic proteins mediating exchange of Na<sup>+</sup> and H<sup>+</sup> ions in various tissues. The NHE catalyzes the electroneutral transport of extracellular Na<sup>+</sup> for intracellular H<sup>+</sup>. They play a major role in regulation of intracellular pH (pHi) in addition to trans-cellular absorption of Na<sup>+</sup>, cell volume regulation and possibly in cell proliferation. These primary functions of the Na<sup>+</sup>/H<sup>+</sup> exchanger have been related to many pathophysiological states, include hypertension, organ growth and hypertrophy, regression of cancer and renal intestinal disorders. Five NHE isoforms (NHE1-5) have been cloned so far. They are all similar in their primary structure and predicted to have 10-12 transmembrane domains. The COOH-terminals of NHE1, NHE2 and NHE3 are intracellular.

**NHE1** (rat/mouse; 820 aa; human 815 aa; chromosome 1 p35-36.1) is 'House Keeper' and is expressed ubiquitously in all tissues. It is implicated in pH homeostasis, volume regulation, and probably cell proliferation. It is expressed on basolateral surface of several epithelia (1).

**FUNCTION:** Involved in pH regulation to eliminate acids generated by active metabolism or to counter adverse environmental conditions. Major proton extruding system driven by the inward sodium ion chemical gradient. Plays an important role in signal transduction.

**SUBCELLULAR LOCATION:** Membrane; Multi-pass membrane protein.

**SIMILARITY:** Belongs to the Na(+)/H(+) exchanger (TC 2.A.36.5.1) family [view classification].

**Protein name** Sodium/hydrogen exchanger 1

**Synonyms** Na(+)/H(+) exchanger 1

NHE-1; Solute carrier family 9 member 1

**Gene name** Name: Slc9a1 Synonyms: Nhe1

**Source of Antigen and Antibodies**

<b>Antigen</b>	22aa peptide of Rat NHE1/Slc9a1 ; protein accession #P26431 , refs 1 <b>Designated (NHE12-P or control peptide)</b> conjugated to KLH; Epitope location. ~C-terminal, Cytoplasmic
<b>Ab Host/type</b>	Chicken, polyclonal Unpurified antiserum (cat #NHE12-S) Aff pure IgG (cat #NHE12-A) purified over the antigen column
<b>2-ab</b>	Cat # 60320, goat anti-chicken IgG-HRP (AP, biotin, FITC conjugates also available
<b>-ve control</b>	# 20010-1, Chicken (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 -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** (1:1K-5K for neat serum and 1-10 ug/ml for affinity pure using Chemiluminescence technique). A band of 95-110 kDa has been detected in brush border membrane (2).

**ELISA** (1:100K; using 50-100 ng 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**

The 22-aa rat NHE12-P sequence shows 100% homology with human, rat, mouse, bovine, pig and rabbit , and 90% with the hamster NHE1. No significant sequence homology exist with other NHE isoforms (NHE2-5). 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: [www.4adi.com/data/abblock.html](http://www.4adi.com/data/abblock.html)).

**General References:**

Sardet C et al (1989) Cell 56, 271; Sardet C et al (1990) Science 247, 723; Tse CM et al (1991) Mol Cell Biochem. 125, 137; Orłowski J et a (1992) J Biol. Chem. 267, 9331; Chris Yun CH et al (1995) Am J Physiol. 269, G1-G11 (Review); Josette N and Pouyssegur J (1995) Am J Physiol. 268, C283-C296 (review); Yoshioka et al (1997) J Biol. Chem. 122, 641; Yamashita T et al (1992) J Biochem. 111, 162; Siczkowski M et al (1995) Cir. Res. 76, 825.

**Citations of ADI's antibodies for NHE** (see updated list at: [www.4adi.com/flr/nheflr.html](http://www.4adi.com/flr/nheflr.html) )

\*This product is for in vitro research use only.

**Some New Antibodies from ADI...**

• Acetylcholine • BGT-1 • Dopamine • GABA (GAT1, -2, -3) • VGAT • Glycine (Glyt 1, 2) • Glutamate (GLT1, GLAST, EAAC1) • Serotonin • Proline, VGAT • NET • Taurine • Arginine Vasopressin Receptors 1/2 • Aquaporins (AQP 1-9 and RUT2

NHE12-S-A-P

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**India Contact:**

**Life Technologies (India) Pvt. Ltd.**

306, Aggarwal City Mall, Opposite M2K Pitampura, Delhi – 110034 (INDIA). Ph: +91-11-42208000, 42208111, 42208222, Mobile: +91-9810521400, Fax: +91-11-42208444

Email: [customerservice@lifetechindia.com](mailto:customerservice@lifetechindia.com) Website: [www.lifetechindia.com](http://www.lifetechindia.com)