

Product Specification Sheet

Aquaporin 4 (AQP4; WCH4; MIWC)

<input type="checkbox"/> Cat # AQP41-P	Rat AQP4 Control/blocking peptide	SIZE: 100 ug
<input type="checkbox"/> Cat # AQP41-S	Rabbit Anti-rat AQP4 antiserum #1	SIZE: 100 ul
<input type="checkbox"/> Cat # AQP41-A	Rabbit Anti-rat AQP4 Ig G #1 (aff pure)	SIZE: 100 ug

Water is a critical component of all living cells. Interestingly, tissue membranes show a great degree of water permeability. Mammalian red cells, renal proximal tubules, and descending thin limb of Henle are extraordinarily permeable to water. Water crosses hydrophobic plasma membranes either by simple diffusion or through a facilitative transport mechanism mediated by special protein "aquaporins". Over the last decade, genes for several members of aquaporin family have been cloned, expressed, and their distribution studied in many tissues. **AQP4** (MIWC, mercury-insensitive water channel; 301 AA; gene locus 18q22) is expressed in brain and in other tissues as well.

FUNCTION: Forms a water-specific channel. Osmoreceptor which regulates body water balance and mediates water flow within the central nervous system. It is expressed predominantly in the ependymal cell lining the aqueductal system and over the space of the brain in contact with the subarachnoid space, as cerebrospinal fluid fills these structures it may facilitate water balance between brain parenchyma and the fluid compartment. In the plasma membranes of the neurons of the paraventricular and supraoptic nuclei, it may mediate rapid changes in cell volume in response to local shifts in extracellular osmolarity.

SUBCELLULAR LOCATION: Multi-pass membrane protein.
ALTERNATIVE PRODUCTS: 2 named isoforms produced by alternative splicing. Long Isoform 1 (ID P47863-1, 323-aa; short isoform 2, missing 150-204 aa; 268 aa).
TISSUE SPECIFICITY: Abundant in mature brain but only weakly detectable in eye, kidney, intestine, and lung.
DOMAIN: Aquaporins contain two tandem repeats each containing three membrane-spanning domains and a pore-forming loop with the signature motif Asn-Pro-Ala (NPA).
SIMILARITY: Belongs to the MIP/aquaporin (TC 1.A.8) family
 Protein name Aquaporin-4;
 Synonyms AQP-4, WCH4, Mercurial-insensitive water channel MIWC ; Gene name Aqp4

Source of Antigen and Antibodies

Antigen	17-aa peptide of Rat AQP4 ; (Gene Accession #P47863 Designated (AQP41-P or control peptide (1); Designation (#AQP41-P, control/blocking peptide) conjugated to KLH; epitope location ~ C-terminus, Cytoplasmic
Ab Host/type	Rabbit, Polyclonal unpurified antiserum (#AQP41-S) and IgG, purified over antigen-agarose (Cat # AQP41-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 -200C and powder at 40C 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 using Chemiluminescence technique). (see refs 2)

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

Histochemistry & Immunofluorescence: we recommend the use of affinity purified antibody at 2-10 µg/ml (2). see refs 2.

Specificity & Cross-reactivity

Rat AQP41-P peptide is 94% conserved in mouse, 88% in bovine, 86% in rabbit and 82 % in human AQP4 (hAQP4). It has no significant sequence homology with other AQPs or any other known proteins. The 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/ug of aff pure IgG or 1 ul antiserum) to confirm antibody specificity.

General References : (1) Hasegawa (1994) *JBC* 269:5497; (2) Jung, J. S (1994) *PNAS* 91:13052; (3) Terris, J (1995) *Am J. Physiol.* 269:F775; (4) Fregeri, A (1995) *PNAS* 92:4328; (5) Misaka, T (1996) *FEBS Lett.* 381:208-212.

Citations of ADI's antibodies for Aquaporins (see updated list at www.4adi.com/flr/aquaporin.html)

Leung JCK, 2005, *Nephrology* 10, 63-72, , WB., IHC
 Bobic M, 2004, *Brain Research*, 1026, 168-178, , IHC, IF, EM
 Cadnapaphornchai MA, 2004, *AJP Renal Physiol*, 286, 875, WB,
 Blank M, 2004, *Mol Cellular Neuroscience*, 26, 530-543, , IF
 Meng S, 2004, *Eur J Neuroscience* 19, 2261-2269, IHC
 Lim S-W, 2004, *AJP Renal Physiol.*; 287: 139 - 151, WB, IHC
 Amiry-Moghaddam M, 2003, *PNAS.*; 100: 2106 - 2111., , IHC
 Speake T, 2003, *BBA*, 1609, 80-86, WB, IF
 Tietz PS, 2003, *JBC* 278, 20413-20419, WB,

*This product is for in vitro research use only.

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