3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Anti-Water Channel Aquaporin 3
produced in rabbit, affinity isolated antibody

Catalog Number **A0303**

Product Description

Anti-Water Channel Aquaporin 3 (AQP3, WCH3, Mercurial-insensitive Water Channel 3) is produced in rabbit using the peptide (C)STEA ENVKL AHMKH KEQI, corresponding to residues 275-292 of rat AQP3 with an additional N-terminal cysteine, as immunogen. The antibody is affinity isolated on immobilized Protein A.

Anti-Water Channel Aquaporin 3 recognizes rat and mouse aquaporin 3. It has been used in immunoblotting, and immunohistochemistry.[4,5]

The mechanism of water movement across cell membranes remained obscure until 1992, when it was shown that the previously described red cell protein, CHIP28, formed a water channel when expressed in *Xenopus* oocytes.[6] This protein, together with related proteins, were named "aquaporins" (AQPs). All aquaporins bear common structural features, containing intracellular N- and C- termini and six transmembrane segments separated by five connecting loops. The loops between the 2nd and 3rd transmembrane domains, as well as the loop between the 5th and 6th transmembrane domains, contain a highly conserved Asn-Pro-Ala (NPA) motif. The structure is characteristic of a wider family of transmembrane proteins, named after its first member MIP family.[7,8]

Aquaporins are widely distributed from bacteria to plants and animals. In *E. coli*, one aquaporin has been identified that is named AQP-Z.[9] In the plant *Arabidopsis thaliana*, over 23 different MIP proteins and over 9 AQPs have been characterized.[10] In mammals, at least 11 different AQPs have been cloned.

AQP1 (CHIP28) is widely distributed in the body. In kidney, it is located in the proximal tubule and in the descending thin limb. It is responsible for constitutive water readsorption.[11] AQP1 is highly expressed in adult red blood cells membranes. The allelic differences in AQP-1 glycan are the molecular site of the Colton blood group.[12] Surprisingly, the rare patients who lack the Colton blood group due to "knockout" mutations in AQP1 gene, suffer no significant clinical effect.[13] AQP2 is responsible for the increase in osmotic water permeability in response to vasopressin. This action is mediated by cAMP, whose intracellular levels increase as a result of binding of vasopressin to V2 receptors.[14,15] Mutations in AQP2 gene are responsible for an autosomal form of congenital nephrogenic *diabetes insipidus*.[16,17]

AQP3 provides kidney medullary collecting ducts with high permeability to water, permitting water to move in the direction of an osmotic gradient and may play an important role in gastrointestinal tract water transport. AQP3 and AQP4 are located at the basolateral part of epithelial cells in kidney, colon and trachea.[18-20] AQP4 is a osmoreceptor which regulates body water balance and mediates water flow within the central nervous system. It is abundant in mature brain, found in astrocyte end-feet that surround capillaries and form the *glia limitans,*[21] and weakly detectable in eye, kidney, intestine and lung. AQP5 is expressed in the apical part of the secretory epithelial cells.[22,23] AQP6 is located in intracellular membrane vesicles in mutliple types of renal epithelia.[24] It is presumably involved in the intracellular water transfer in these cells. AQP7 is expressed in testis[25] and in small intestine epithelium.[26] AQP8 is also expressed in testis.[7] AQP9 is highly expressed in peripheral leukocytes, and, to lesser extent, in liver.[27] The recently cloned AQP9L is highly expressed in liver.[28]

Reagent

Supplied lyophilized from phosphate buffered saline, pH 7.4, containing 1% BSA and 0.025% sodium azide.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions
Reconstitute the contents of the vial with either 0.05 ml or 0.2 ml deionized water, depending on the package size purchased. Antibody dilutions should be made in buffer containing 1% bovine serum albumin.

Storage/Stability
Prior to reconstitution, store at –20 °C. After reconstitution, the stock antibody solution may be stored at 2-8 °C for up to 2 weeks. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile
Immunoblotting: a recommended working dilution of 1:200 was determined using rat kidney membranes.

Immunohistochemistry was performed using mouse kidney sections.

Note: In order to obtain best results and assay sensitivities of different techniques and preparations, we recommend determining optimal working dilutions by titration test.

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