ALPHA DIAGNOSTIC INTERNATIONAL

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Product Specification Sheet

Vesicular Monoamine Transporter 1 (VMAT1) Antibodies

Cat # VMAT12-P	Human VMAT1 Control/blocking peptide # 2 ,	**SIZE**: 100 ug
Cat # VMAT12-S	Rabbit Anti-Human VMAT1 antiserum # 2,	**SIZE**: 100 ul
Cat # VMAT12-A	Rabbit Anti-Human VMAT1 IgG# 2, aff pure,	**SIZE**: 100 ug

The regulated exocytotic release of neurotransmitters in response to neural activity requires storage within intracellular vesicles. For classical transmitters that are synthesized in the cytoplasm or appear there after removal form the synapses by plasma membrane reuptake, storage depends upon the active transport into the vesicles. Several distinct transport activities have been identified for monoamines, acetylcholine, glutamate, GABA and glycine. Vesicular monoamine transporters (VMATs) catalyze transport and storage of monoamines, serotonin, dopamine, norepinephrine, epinephrine, and histamine. The driving force utilized by the VMAT is the H+ electrochemical gradient generated by a vacuolar ATP-dependent H+ pump (V-ATPase) located on vesicular plasma membrane. VMAT is inhibited by a wide variety of compounds including reserpine and tetrabenazine.

Recently, cDNA cloning by functional expression has identified two homologous but distinct VMAT genes from rat, bovine, and human adrenal glands. **VMAT1** (previously termed CGAT for chromaffin granule amine transporter) is primarily expressed in adrenal glands, and it displays low sensitivity to inhibition by TBZ. It has about 3-fold lower affinity for most monoamines and about 100-fold less for histamine than the VMAT2. VMAT1 also has a lower turnover number than VMAT2. **VMAT2**, previously termed SVAT (synaptic vesicle amine transporter), is primarily found in monoaminergic cell bodies of the central nervous system and also in stomach but not in adrenals. Tetrabenazine and psychostimulants such as methamphetamine inhibits VMAT2 much more potently than VMAT1. Thus the VMATs show considerable differences in physiological and pharmacological properties. VMATs are predicted to contain 12 membrane spanning domains with a large hydrophilic loop and N-glycosylation sites between domain I and II. Both N and C-terminus are predicted to be cytoplasmic. Rat VMAT1 is a 521 aa transmembrane protein with 12 transmembrane domain (1). Rat VMAT2 is 515 aa.

Source of Antigen, Antibodies, and Positive Controls

Antigen	20-aa peptide of human VMAT1/VMT1/cgat (Slc18a1, protein accession #P54219, refs 1) **Designated (VMAT12-P or control peptide)** conjugated to KLH; epitope location ~ C-terminal, Cytoplasmic
Ab Host/type	Rabbit, polyclonal Unpurified antiserum (cat # VMAT12-S) Aff pure IgG (**cat #VMAT12-A**) purified over antigen-agarose column
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

Western Blotting (1:1K-5K for neat serum and 1-10 ug/ml for affinity pure antibody using Chemiluminescence technique). An antibody made to the C-terminal VMAT1 peptide detected a major band at ~55 kDa in postnuclear supernatants of CHO transfected with VMAT1 and not in wild type cells

ELISA: Control peptide can be used to coat ELISA plates at 1 ug/ml and detected with antibodies (1:10-50K for neat serum and 0.5-1 ug/ml for affinity pure).

Histochemistry & Immunofluorescence: we recommend the use of affinity purified antibody at 1-20 ug/ml in paraformaldehyde fixed sections of tissues. VMAT1 has been localized in adrenal chromaffin cells, endocrine and paracrine cells associated with the intestine, stomach, sympathetic nervous system. (refs 2)

Specificity & Cross-reactivity

The human VMAT12-P peptide is 70% conserved in mouse, and 63% conserved in rat VMAT1. We recommend the use of anti-rat VMAT1 (Cat # VMAT11) for the detection of rat VMAT1. No significant sequence homology of VMAT12P is seen with VMAT2 or other transporters. Antibody crossreactivity 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:

Liu, Y et al (1992) Cell 70, 539-551, Liu Y et al (1994) J Cell Biol. 127, 1419-1433, Weihe E et al (1994) J. Mol. Neurosci. 5, 149-164; Erickson JD et al (1996) Proc. Natl. Acad. Sci. 93, 5166-5171

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

Koerner P, 2004 J Neurochem 91, 2, 493-500, IHC,

*This product is for In vitro research use only.

Related material available from ADI

Antibodies VMAT1, VMAT1, Vasopressin receptor (AVP-V2); GABA, Glutamate, Dopamine, Proline, and Serotonin transporters

VMAT12-S-A-P 70814A

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