

Product Specification Sheet

Beta-Site APP Cleaving Enzyme 2 (BACE2/Asp1) Antibodies

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|-----------------|---|---------------------|
| Cat. # BACE21-P | Human BACE2/Asp1 Control/blocking Peptide # 1 | SIZE: 100 ug |
| Cat. # BACE21-S | Rabbit Anti-Human BACE2/Asp1 antiserum # 1 | SIZE: 100 ul |
| Cat. # BACE21-A | Rabbit Anti-Human BACE2/Asp1 IgG # 1 (aff pure) | SIZE: 100 ug |

β -amyloid (A β) deposition in the brain is the hallmark of Alzheimer's Disease (AD). To initiate A β formation, β -secretase cleaves APP at the N-terminus of A β to release APPs β (~100 kDa soluble NT-fragment), and C99, a 12-kDa CT membrane fragment. Alternatively, α -secretase cleaves within the A β to prevent the formation of A β . Both C99 and C83 can be further cleaved by γ -secretase releasing A β and a p3 peptide, respectively.

Recently, **BACE (Beta-site APP Cleaving Enzyme)** has been identified as β -secretase. BACE belongs to the family of **Aspartyl proteases (Asp)** also known as **Memapsins**. At least four related Asps, located on chromosome IV and X, have been cloned (**Asp1, Asp2, Asp3, and Asp4**). Human **BACE/Asp2/Memapsin2**, located on chromosome 11, is a transmembrane protein of 501 aa (signal peptide 1-21 aa, a proprotein domain 22-45 aa, 1 TM domain near the CT, and a short cytoplasmic CT- tail of 24 aa; mature protein 46-460 aa). The luminal portion of BACE has two active site motifs at 93 aa and 289 aa with signature sequence of aspartic proteases. **BACE2 or Asp1/Memapsin2** (human 518, mouse 514 aa) resides in the obligate Down Syndrome regions of chromosome 21. BACE2, 52% identity with BACE/Asp2, is most divergent at the N and C-terminus, but display the same protein topology as BACE. BACE2, like BACE, is expressed in brain and several tissues and cell lines.

Source of Antigen and Antibodies

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| Antigen | 10-aa peptide of human BACE2/Asp1; Designated (BACE21-P or control peptide) conjugated to KLH; Epitope location ~ C-terminal, Cytoplasmic domain |
| Ab Host/type | Rabbit, Polyclonal Unpurified antiserum (cat #BACE21-S) Aff pure IgG (cat #BACE21-A) purified over antigen-agarose column |
| 2-ab | Anti-rabbit IgG-HRP cat # 20320 (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 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 -20OC 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). BACE is approx 70 kDa, greater than the theoretical size of ~51 kDa, due to glycosylation (see published refs 2).

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

Histochemistry: Not tested. We recommend the use of 2:20 ug/ml of affinity pure antibody (see published refs 2).

Specificity & Cross-reactivity

The human BACE21-P peptide sequence is 100% conserved in mouse and rat BACE/Asp2. No significant sequence homology exists with BACE2/Asp1, a homolog of BACE, or other Asps. 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: Saunders AJ (1999) Science 286, 1255; Fan W (1999) Science 286, 1256; Vassar R (1999) Science 286, 735-741; Yan R (1999) Nature 402, 533-537; Sinha S (1999) Nature 537-540; Hussain I (1999) Mol. Cell Neurosci. 14, 419-427; Lin X (2000) PNAS 97, 1456-1460.

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

Vattemi, G, 2003, Expal Neurology, 179, 150-158, WB, IHC

Vattemi, G., 2001, Lancet 358, 1962-1964, WB

Barbiero L, 2003, Expl Neurology 182, 335- 345, WB

*This product is for In vitro research use only.

BACE21-S-A-P

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