ALPHA DIAGNOSTIC INTERNATIONAL

Product Specification Sheet

Beta-Site APP Cleaving Enzyme (BACE/Asp2/Memapsin2) Antibodies

Cat. # BACE15-R-50 Purified, recombinant human BACE1 protein **SIZE**: 50 ug

β-amyloid **(Aβ)** deposition in the brain is the hallmark of Alzheimer's Disease (**AD**). To initiate Aβ formation, **β-secretase** cleaves APP at the N-terminus of Aβ to release APPsβ (~100 kDa soluble NT-fragment), and C99, a 12-kDa CT membrane fragment. Alternatively, **α-secretase** cleaves within the Aβ to prevent the formation of Aβ. Cleavage by α-secretase produces a soluble N-terminal fragment, APPsα, and a 10-kDa membrane C-terminal fragment, C83. Both C99 and C83 can be further cleaved by **γ-secretase** releasing Aβ and a nonpathogenic 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). BACE expression was most prominent in most areas of the rat brain and pancreas. It has been localized in the compartments of the secretory pathways.

Source of Antigen

The extracellular domain of Human BACE1 (1-460 aa) (1) was expressed as his-tag secreted protein in NSO myeloma cells and purified >95%. The purified BACE-1 protein (cat # BACE15-R-50) exists as two forms, pro and mature, with N-terminal sequences of TQHGIRLPLR and ETDEEPEEPG, respectively. By SDS-PAGE, the apparent mol. Wt. ~ 68 - 70 kDa for the pro form and 65 - 67 kDa for the mature form. Endotoxin content is <1.0 EU/ug.

Biological Activity:

Bilogical activity was measured by the ability of the recombinant protein to cleave a fluorescent peptide substrate Mca-Ser-Glu-Val-Asn-Leu-Asp-Ala-Glu-Phe-Arg-Lys(Dpn)-Arg-Arg-NH2 as measured using excitation and emission wavelengths of 320 and 405 nm, respectively. The specific activity, measured with 10 µM ES004 and 1 µg enzyme in 100 µL of 0.1 M sodium acetate, pH 4.0, at room temperature, is > 3.5 pmoles/min/µg. The peptidase activity of BACE-1 is optimal under mildly acidic conditions (pH 3.5 - 5.5), consistent with its proposed function in an acidic intracellular compartment.

Form & Storage

The protein is supplied at 50 ug/50 ul in liquid buffer (25mM Tris, 0.15 M NaCl, pH 7.5) or powder form. Reconstitute the powder in water or other appropriate buffer in 50 ul (concn 1 mg/ml) or other desired volume but no less than <100 ug/ml. It is advisable to add BSA at 0.1% as a carrier protein to minimize protein losses. The protein is not necessarily sterile but it can be made sterile by filtering through 0.22 um membrane.

Store powder at –20oC for 3-6 months. Reconsituted or liquid protein should be stored in small aliquots at –20oC to –80oC. Avoid repated freeze and thaw.

General References: 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

Citations of ADI's antibodies for Beta-site cleaving enzymes (BACE), see updated list at www.4adi.com\flr\baceflr.html)

*This product is for In vitro research use only.

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