

## Product Information

**β-Secretase, extracellular domain  
human, recombinant  
C-terminal FLAG®-tagged  
expressed in HEK 293 cells**

Catalog Number **S4195**  
Storage Temperature 2–8 °C

Synonyms: BACE1, Asp 2, Memapsin 2

### Product Description

β-Secretase (BACE1 or β-site APP-cleaving enzyme) and γ-secretase are proteases that cleave the amyloid precursor protein (APP) to produce amyloid β peptide (Aβ). The accumulation of Aβ in the brain is believed to be a primary cause for the progression of Alzheimer's disease. Since there is no effective drug for the treatment of Alzheimer's disease, there is an intense interest in studying the inhibition of β- and γ-secretases for therapeutic intervention in Alzheimer patients.<sup>1-4</sup>

Knockout studies show BACE1 is critical for Aβ generation. Transgenic mice lacking BACE1 do not produce Aβ, but show an otherwise normal phenotype with no detrimental effects on viability or morphology.<sup>5</sup> This raises the possibility therapeutic BACE1 inhibition could be accomplished without major toxicity.

The product is supplied as a solution in 20 mM Hepes, pH 7.4, with 125 mM NaCl.

Purity: ≥90% (SDS-PAGE)

Specific Activity: ≥10,000 units per mg protein.

Unit Definition: One unit will hydrolyze 1.0 picomole of 7-methoxycoumarin-4-acetyl-[Asn<sup>670</sup>, Leu<sup>671</sup>]-Amyloid β/A4 Precursor Protein 770 Fragment 667-676-(2,4-dinitrophenyl)-Lys-Arg-Arg amide substrate per minute at pH 4.5 at 37 °C.

Activity Assay: 6–12 units of β-secretase and 10 μM substrate in a total reaction volume of 100 μl. Assay buffer used was 20 mM sodium acetate, pH 4.5, with 0.1% TRITON® X-100.

### 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.

### Storage/Stability

The product ships on wet ice and storage at 2–8 °C is recommended.

### References

1. Mallende, W.D., *et al.*, Characterization of recombinant, soluble β-secretase from an insect cell expression system. *Adv. Mol. Pharmacol.*, **59**, 619-626 (2001).
2. Citron, M., β-Secretase as a target for the treatment of Alzheimer's disease. *J. Neurosci. Res.*, **70**, 373-379 (2002).
3. Hong, L., *et al.*, Memapsin 2 (β secretase) as a therapeutic target. *Biochem. Soc. Trans.*, **30**, 530-534 (2002).
4. Rochette, M.J., and Murphy, M.P., γ-Secretase: substrates and inhibitors. *Mol. Neurobiol.*, **26**, 81-95 (2002).
5. Roberds, S.L., *et al.*, BACE knockout mice are healthy despite lacking the primary β-secretase activity in brain: implications for Alzheimer's disease therapeutics. *Hum. Mol. Genet.*, **10**, 1317-1324 (2001).

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