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ProductInformation

ANTI-PRESENILIN 1 [14-33]
Developed in Goat, Whole Serum

Product Number **P5235**

Product Description

Anti-Presenilin 1 [14-33] is developed in goat using a highly purified peptide corresponding to amino acid residues 14-33 of presenilin 1.[1] The product is provided as a whole serum.

Anti-Presenilin 1 [14-33] recognizes presenilin 1 protein from human tissue. It is useful for both paraffin and frozen sections and ELISA.

Alzheimer's disease (AD), the most common human neurodegenerative disease, is associated with selective degeneration of synapses and neuronal death in brain regions critical for cognition and memory, leading to progressive and severe deterioration of cognitive functions and dementia. The majority of early-onset cases of AD and familial (FAD) autosomal disorders, associated with mutations of several genes.[2,3] These include the amyloid precursor proteins (APPs), and the newly discovered genes presenilin 1 (PS1, S182) and presenilin 2 (PS2, STM2) located on chromosome 14 and 1, respectively.[2-6] PS1 and PS2 are highly homologous proteins (approx. 43-52 kDa) with eight transmembrane domains.

The presenilins are homologous to the *C. elegans* sel-12 protein involved in the *Notch* signaling pathway. PS1 and PS2 mRNA are ubiquitously expressed in peripheral tissues and in the CNS. In the brain, PS1 and PS2 are expressed primarily in neurons and localized mainly in cell bodies, axons and dendrites.[7,8] In non-neuronal cells, PS1 and PS2 are localized to the nuclear membrane, endoplasmic reticulum and Golgi.[8,9]

The biological functions of the presenilins are yet unknown, but they are thought to be involved in protein trafficking. Proteolytic processing of PS1 results in a 27 kDa N-terminal and a 18 kDa C-terminal fragment, which are thought to associate following cleavage.[10] At least 30 pathogenic mutations of the PS1 gene have been found in about half of the early-onset FAD, while only two pathogenic mutations have been found in PS2. PS1 mutations have been linked to the increased formation of βA4 peptide in AD[11] and defective intracellular trafficking of β-catenin after activation of the Wnt/β-catenin signal transduction pathway.[12]

Hippocampal neurons from PS1 mutant knock-in mice exhibit increased vulnerability to β-amyloid toxicity, associated with increased superoxide production, mitochondrial dysfunction and caspase activation.[13]

Reagents

Anti-Presenilin 1 [14-33] is supplied as 100 µl whole serum containing 0.1% sodium azide.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

Storage/Stability

Store at –20°C. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. 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
The recommended working dilution is 1:1000 for use on frozen sections and 1:100 for use on paraffin sections. No pretreatment is required for staining of paraffin 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.

References

1. Murphy, G.M. et al., Am. J. Path., **149**, 1839 (1996).
2. Price, D.L. and Sisodia, S.S., Ann. Rev. Neurosci., **21**, 479 (1998).
3. Tanzi, R.E. et al., Alzheimer's Disease Rev., **1**, 91 (1996).
4. Schellenberg, G.D. et al., Science, **258**, 668 (1993).
5. Sherrington, R. et al., Nature, **375**, 754 (1995).
6. Levy-Lahad, E. et al., Science, **269**, 973 (1995).
7. Elder, G.A. et al., J. Neurosci. Res., **45**, 308 (1996).
8. Cook, D.G. et al., Proc. Natl. Acad. Sci. USA, **93**, 9223 (1996).
9. Kovacs, D.M. et al., Nature Med., **2**, 224 (1996).
10. Thinakaran, G. et al., Neuron, **17**, 181 (1996).
11. Scheuner, D. et al., Nature Med., **2**, 864 (1996).
12. Nishimura, M. et al., Nature Med., **5**, 164 (1999).
13. Guo, Q. et al., J. Neurochem., **72**, 1019 (1999).

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