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ProductInformation

Anti-phospho-TAU (pSer$^{199/202}$)
produced in rabbit, affinity isolated antibody

Catalog Number **T6819**

Product Description

Anti-phospho-Tau (pSer$^{199/202}$) is produced in rabbit using as immunogen a synthetic phosphopeptide derived from the region of human Tau that contains serines 199 and 202. The sequence is conserved in mouse and rat. The serum is affinity purified using epitope-specific affinity chromatography. The antibody is preadsorbed to remove any reactivity towards a non-phosphorylated Tau.

The antibody recognizes human Tau (pSer$^{199/202}$) (45-68 kDa). It has been used in immunoblotting applications. Rat and mouse have not been tested, but are expected to react.

Tau is a microtubule-associated phosphoprotein (MAP), localized in neuronal axons. It promotes tubulin polymerization and stabilizes microtubules.[1] The biological activity of Tau is regulated by its degree of phosphorylation.[1,2] Hyperphosphorylated Tau is the major protein of the paired helical filaments (PHFs), which make up the pathological neurofibrillary tangles of Alzheimer's disease (AD). The PHFs are also found in the lesions of other central nervous system disorders.[3,4]

Tau phosphorylation involves numerous kinases: glycogen synthase kinase 3β (GSK-3β), MARK kinase, MAP kinase, protein kinase A and C, cyclin-dependent kinase 5 (Cdk5), p38 kinase, c-Jun N-terminal kinase, and casein kinase II.[1,2,5,6,7] Combined Tau protein kinase II (TPKII), which consists of Cdk5 and GSK-3β, is the most potent phosphorylation agent indirectly involved in the regulation of the phosphorylation state of Tau in neuronal cells.[6,8] In addition, Tau is phosphorylated *in vitro* by osmotic cellular stress, which activates the stress-activated protein kinases (SAPKs).

To date, a total of 25 abnormal phosphorylation sites have been identified on hyperphosphorylated Tau in AD brain.[10] Normal Tau has approximately eight phosphorylation sites. The abnormal phosphorylation occurs usually on serine and threonine residues. Specifically, TPKII phosphorylates serines 202 and 404. GSK-3β transfection phosphorylates serines 199, 202, 235, 396, 404 and 413, and threonines 205 and 231. These sites are among the major abnormal phosphorylation sites of Tau.[11] Phosphorylation on these sites reduces the ability of a given Tau species to promote microtubule self-assembly.[11,12] Okadaic acid increases phosphorylation at threonine 231 and serines 235, 396 and 404. Phosphorylated serine 422 was found in the biopsies of brains from patients with Down syndrome, amyotropic lateral sclerosis, corticobasal degeneration, and Pick's disease. It was absent from a control group of normal brains.[13]

The opposite process, Tau dephosphorylation, is controlled by different protein phosphatases expressed in neurons. Protein phosphatases PP2A and PP2B efficiently dephosphorylate Tau *in vitro* and restore biological activity in the assembly of microtubules.[3,10,14]

Recently it was discovered that propyl isomerase (Pin1) interacts with Tau hyperphosphorylated on threonine 231 and restores the ability of Tau to bind to microtubules.

Reagent

Sufficient for 10 immunoblots.

Supplied in 100 µl Dulbecco's phosphate buffered saline (without Mg^{2+} and Ca^{2+}), pH 7.3, 50% glycerol, containing 1.0 mg/mL BSA (IgG, protease free) and 0.05% sodium azide. Due to the 50% glycerol content the solution is very viscous. To ensure accurate dilution equilibrate the vial to room temperature, mix gently, pipette slowly. Remove excess solution from pipette tip with clean absorbent paper.

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

Store at –20 °C. For extended storage, centrifuge the vial briefly before opening and prepare working aliquots. Due to the 50% glycerol the vial content will remain liquid. For short-term storage (up to one week), store at 2-8 °C.

Product Profile
Immunoblotting: a recommended working dilution of 1:1000 is determined using cell extracts from A431 cells +/- EGF.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by titration test

Specificity
The specificity of Anti-phospho-Tau (pSer$^{199/202}$) for the phosphorylated protein has been demonstrated by the absence of blocking in the presence of the non-phosphorylated immunizing peptide.

References

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