

Product Information

Anti-phospho-Tryptophan Hydroxylase [pSer⁵⁸]

Developed in Rabbit, Affinity Isolated Antibody

Product Number **T 8825**

Product Description

Anti-phospho Tryptophan Hydroxylase [pSer⁵⁸] (TPH) is developed in rabbit using a synthetic phosphopeptide corresponding to amino acid residues surrounding phosphorylated serine 58 of tryptophan hydroxylase as immunogen. The sequence is identical in human, mouse, rat and *Xenopus*. The antiserum is isolated by sequential chromatography on affinity columns with phosphorylated and non-phosphorylated TPH.

Anti-phospho-Tryptophan Hydroxylase [pSer⁵⁸] specifically recognizes ~55 kDa tryptophan hydroxylase protein phosphorylated on serine 58. The antibody is used in immunoblotting and Dot Blot applications.

Tryptophan hydroxylase (TPH) catalyzes the 5-hydroxylation of tryptophan, which is the first step in the biosynthesis of indoleamines (serotonin and melatonin).¹ In mammals, serotonin biosynthesis occurs predominantly in neurons, which originate in the raphe nuclei of the brain, and melatonin synthesis takes place within the pineal gland. Although TPH catalyzes the same reaction within the raphe nuclei and the pineal gland, TPH activity is rate-limiting for serotonin but not melatonin biosynthesis. Low turnover rate of this monoamine neurotransmitter is associated with impaired impulse control. The status of the TPH A779C allele as a marker for suicidality was replicated and linkage with alcoholism was also observed.²

Tryptophan hydroxylase is phosphorylated by protein kinase A (PKA) in the brain.³ Within TPH, two distinct domains have been described, an amino-terminal regulatory domain and a carboxyl-terminal catalytic domain. A full-length cDNA clone for rabbit TPH was expressed in bacteria and five amino-terminal deletions were constructed. The ability of the cyclic AMP-dependent PKA to phosphorylate members of the

deletion series was examined. The results have shown that the first 106 amino acids comprise a regulatory domain that is phosphorylated by PKA at serine-58.⁴

Reagent

The antibody is supplied as 100 µL in 10 mM HEPES, pH 7.5, 150 mM NaCl, 100 µg per ml BSA and 50% glycerol.

Storage/Stability

Store at -20 °C. The antibody is stable for at least 12 months when stored appropriately.

Product Profile

The amount of antibody is sufficient for 10 blots. A recommended working dilution of 1:1000 is determined by immunoblotting using human dorsal Raphe nucleus. For Dot Blot, also use a 1:1000 dilution.

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

References

1. Martinez, A., et al., A structural approach into human tryptophan hydroxylase and its implications for the regulation of serotonin biosynthesis., *Curr. Med. Chem.*, **8**, 1077-1091 (2001).
2. Mann, J. J. et al., Possible association of a polymorphism of the tryptophan hydroxylase gene with suicidal behavior in depressed patients. *Am. J. Psychiatry*, **154**, 1451-1453 (1997).
3. Johansen, P.A., et al., Tryptophan hydroxylase is phosphorylated by protein kinase A. *J. Neurochem.* **65**, 882 - 888 (1995).
4. Kumer, S. C., et al., Amino-terminal analysis of tryptophan hydroxylase: protein kinase phosphorylation occurs at serine-58. *J. Neurochem.*, **69**, 1738-1745 (1997).

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