Anti-Phospho-Ser^{19} Tryptophan Hydroxylase 2

Catalog Number: SY-p1575-19 **Size:** 100 µl $375.00

Product Description: Affinity purified rabbit polyclonal antibody

Applications: **WB**: 1:1000

Antigen: Phosphopeptide corresponding to amino acid residues surrounding the phospho-Ser^{19} of rat tryptophan hydroxylase 2 (TPH2).

Species reactivity: The antibody has been directly tested for reactivity in Western blots with rat tissue. It is anticipated that the antibody will react with bovine, mouse and zebrafish based on the fact that these species have 100% homology with the amino acid sequence used as antigen.

Biological Significance: Tryptophan hydroxylase (TPH) catalyzes the 5-hydroxylation of tryptophan, which is the first step in the biosynthesis of indoleamines (serotonin and melatonin) (Martinez et al., 2001). 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. Serotonin functions mainly as a neurotransmitter, whereas melatonin is the principal hormone secreted by the pineal gland. The activity of TPH is enhanced by phosphorylation by cAMP-dependent protein kinase (PKA) and Ca^{2+}/calmodulin kinase II (CaM K II) (Jiang et al., 2000; Johansen et al., 1996). CaM K II phosphorylates Ser^{19} which lies within the regulatory domain of TPH2 (McKinney et al., 2005).

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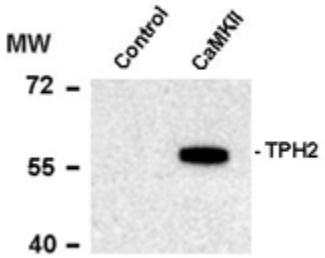

Western blot of recombinant tryptophan hydroxylase incubated in the absence (Control) and presence of Ca^{2+}/calmodulin dependent kinase II (CaMKII) showing specific immunolabeling of the ~55k tryptophan hydroxylase protein phosphorylated at Ser^{19}.

Purification Method: Prepared from rabbit serum by affinity purification via sequential chromatography on phospho- and dephosphopeptide affinity columns.

WB = Western Blot **IF** = Immunofluorescence **IHC** = Immunohistochemistry **IP** = Immunoprecipitation
Packaging: 100 µl in 10 mM HEPES (pH 7.5), 150 mM NaCl, 100 µg per ml BSA and 50% glycerol. Adequate amount of material to conduct 10-mini Western Blots.
Storage and Stability. For long term storage –20°C is recommended. Stable at –20°C for at least 1 year.
Shipment: Domestic - Blue Ice; International – Dry Ice.

Antibody Specificity: Specific for the ~55k tryptophan hydroxylase protein phosphorylated at Ser^{19}.

Quality Control Tests: Western blots performed on each lot.

References:

Jiang GC, Yohrling GJ, Schmitt JD, Vrana KE (2000) Identification of substrate orienting and phosphorylation sites within tryptophan hydroxylase using homology-based molecular modeling. J Mol Biol 302:1005-1017.

Johansen PA, Jennings I, Cotton RG, Kuhn DM (1996) Phosphorylation and activation of tryptophan hydroxylase by exogenous protein kinase A. J Neurochem 66:817-823.

Martinez A, Knappskog PM, Haavik J (2001) Structural approach into human tryptophan hydroxylase and its implications for the regulation of serotonin biosynthesis. Curr Med Chem 8:1077-1091.

McKinney J, Knappskog PM, Haavik J (2005) Different properties of the central and peripheral forms of human tryptophan hydrpxylase. J Neurochem 92(2):311-20.

Kuhn DM, Sakowski SA, Geddes TJ, Wilkerson C, Haycock JW (2007) Phosphorylation and activation of tryptophan hydroxylase 2: identification of serine-19 as the substrate site for calcium, calmodulin-dependent protein kinase II. J Neurochem 103(4):1567-73.

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