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Product Information

Monoclonal Anti-Tryptophan Hydroxylase, clone WH-3
produced in mouse, ascites fluid

Catalog Number **T0678**

Product Description

Monoclonal Anti-Tryptophan Hydroxylase (mouse IgG3 isotype) is derived from the WH-3 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice. Recombinant rabbit tryptophan hydroxylase was used as immunogen. The isotype is determined by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO2.

Monoclonal Anti-Tryptophan Hydroxylase reacts specifically with tryptophan hydroxylase (55 kDa) in immunoblotting assays. It may also be used in immunohistochemistry and ELISA applications. Cross reactivity has been observed with human, monkey, rabbit, and rat. In immunohistochemical labeling of human midbrain tissue sections, the staining by the product is restricted to the cell bodies and fibers in dorsal raphe (DR), while no staining is observed in the neuromelanin-containing cells in substantia nigra (SN).

Monoclonal Anti-Tryptophan Hydroxylase may be used for the localization of tryptophan hydroxylase using various immunochemical assays including ELISA, immunoblot and immunohistochemistry.

The nervous system consists of an interlacing network of nerve cells with specialized contact areas, called synapses, between their processes. The synapses are recognized as being the sites of transmission between nerve cells; the arrival of a pulse at the synapse causes the discharge of chemical substances. Serotonin (5-HT, 5-hydroxytryptamine) is one of the best known biogenic amine neurotransmitters in the central nervous system (CNS).[1,2] It is selectively contained in neurons with cell bodies mainly located in the raphe area and with terminals diffusely distributed throughout the CNS. Serotoninergic cell bodies that send fibers mainly to the spinal cord are distributed in posterior raphe nuclei (nucleus raphe obscurus, pallidus, and magnus), whereas those with projections invading forebrain areas i.e., striatum, hippocampus, hypothalamus, septum, amygdala, and cerebral cortex, belong to anterior raphe nuclei (nucleus raphe dorsalis, centralis superior, and linearis rostralis). Outside the CNS, 5-HT is present in the pineal gland where it is the precursor of melatonin. Serotoninergic neurons have been identified in the peripheral nervous system, notably in plexus innervating the gut. These neurons seem to have metabolic properties very similar to those observed in central serotoninergic neurons. Two enzymatic steps are necessary for the synthesis of 5-HT from its natural precursor, tryptophan, an essential amino acid in mammals. After being taken up in serotoninergic neurons by a high-affinity carrier, tryptophan is converted into 5-hydroxytryptophan (5-HTP) by tryptophan hydroxylase. The 5-HTP is then decarboxylated into 5-HT by aromatic amino acid decarboxylase. Tryptophan hydroxylase (TPH; L-tryptophan tetrahydropteridine:oxygen oxidoreductase; EC 1.14.16.4), the rate-limiting enzyme for the synthesis of serotonin, is a very specific enzyme found only inside serotoninergic neurons. The distribution of tryptophan hydroxylase coincides with the distribution of serotonin, therefore measurement of the level of tryptophan hydroxylase should provide an indirect measure of serotonin biosynthetic capacity. The use of specific antibodies raised against tryptophan hydroxylase permits precise localization and quantitation of the enzyme via immunocytochemical and immunoblotting analyses.[3]

Reagent

Supplied as ascites fluid with 15 mM sodium azide as preservative.

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.

Product Profile
Indirect immunoblotting: the minimum antibody titer of 1:1,000 was determined using rabbit pineal gland extract.

Note: In order to obtain best results, it is recommended that each user determine the optimal working dilution for individual applications by titration assay.

Storage
For continuous use, store at 2-8 °C for up to one month. For extended storage freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

References

1. Bender, D., et al. (eds.), Progress in Tryptophan and Serotonin Research 1986", Walter de Guyter, Berlin (1987).
2. Hamon, M., et al., In: Handbook of Neurochemistry, vol. 6 (Receptors in the Nervous System), Lajtha, A. (ed.), Chapter 6, Plenum Press, New York (1984).
3. Cash, C., et al., *Eur. J. Biochem*., **149**, 239 (1985).

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