



**MONOCLONAL ANTI-TYROSINE HYDROXYLASE
CLONE TH-2
Mouse Ascites Fluid**

Product No. **T 1299**

Product Description

Monoclonal Anti-Tyrosine Hydroxylase (mouse IgG1 isotype) is derived from the hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. Rat tyrosine hydroxylase was used as the immunogen. The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2). The product is provided as ascites fluid with 0.1% sodium azide

Monoclonal Anti-Tyrosine Hydroxylase (TH) recognizes an epitope present in the N-terminal region of both rodent (~60 kDa) and human (62-68 kDa) tyrosine hydroxylase (TH). The antibody is reactive in immunohistochemical, immunoblotting, and immunoprecipitation protocols and cross-reacts with TH from numerous mammalian species including human, monkey, bovine, sheep, rabbit, guinea pig and rodent (rat). Using a perfusion-fixed rat brain (4% paraformaldehyde, 0.2% glutaraldehyde), intense immunohistochemical staining of perikaryons and fibers is obtained. The use of Triton X-100 (Product Code X-100) as a pretreatment is critical to staining of fibers which are otherwise poorly stained with the antibody. The immunohistochemical sensitivity of the antibody is sufficient to visualize TH-positive fibers in paraformaldehyde-fixed monkey cerebral cortex. Use of this antibody in blot studies produces selective labeling of TH with low background, in several protocols including chemiluminescence, protein A/G-biotin/¹²⁵I-streptavidin, and rabbit anti-mouse immunoglobulin antisera/¹²⁵I-protein A. The antibody can be used to immunoprecipitate native or SDS-denatured rat TH, when it is being added either from a stock solution (e.g., followed by rabbit anti-mouse immunoglobulin antisera and protein A immunosorbent) or as a solid-phase immunosorbent (e.g., after covalent coupling to agarose).

Monoclonal Anti-Tyrosine Hydroxylase may be used for the localization of tyrosine hydroxylase using various immunochemical assays such as ELISA, immunoblot, dot blot, immunoprecipitation and immunocytochemistry.

Product Information

Tyrosine hydroxylase¹ (TH, tyrosine 3-mono-oxygenase, EC 1.14.16.2) is a tetrameric enzyme composed of four 60-68 kDa subunits. TH catalyzes the hydroxylation of L-tyrosine to L-3,4-dihydroxyphenylalanine (L-dopa) in brain and adrenal medulla. This is the initial and rate limiting step in the biosynthesis of catecholamines¹ (dopamine, norepinephrine, and epinephrine), that serve as neurotransmitters and hormones. TH is produced from a single gene; its synthesis is regulated by transcriptional, translational, and post-translational mechanisms.² In most species, a single form of TH mRNA is produced and translated, resulting in a single, homotetrameric form of the protein. However, in the monkey, ape, and human, TH RNA undergoes alternative splicing^{3,4} resulting in either two (monkey, ape) or four (human) isoforms of TH subunit protein.⁵⁻⁷ The four human isoforms are TH-1 (55.6 kDa), TH-2 (4 additional amino acids, 56 kDa), TH-3 (27 additional amino acids, 58.1 kDa), and TH-4 (31 additional amino acids, 58.5 kDa). Only humans express all four isoforms; all other anthropoids express only the TH-1 and TH-2 isoforms.⁷ The availability of sensitive immunochemical reagents that recognize known epitopes will facilitate studies of the mechanism, properties, and localization of TH. As such, the specific and sensitive immunoreactivity of the monoclonal antibody will be a useful tool for identification and mapping of the catecholaminergic cells present in the brain and spinal cord and in sympathetic, chromaffin, and entero-chromaffin systems.

Precautions and Disclaimers

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 hazards and safe handling practices.

Product Profile

The minimum antibody titer of 1:10,000 was determined by immunoblotting using cultured rat adrenal pheochromocytoma cells.

Storage

For continuous use, store at 2-8 °C for up to one month. For extended storage, the solution may be frozen 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.

References

1. Nagatsu, T., et al., J. Biol. Chem., **239**, 2910 (1964).
2. Wessels-Reiker, M., et al., J. Biol. Chem., **266**, 9347 (1991).
3. Grima, B., et al., Nature, **326**, 707 (1987).
4. Ichinose, H., et al., Biochem. Biophys. Res. Commun., **195**, 158 (1993).
5. Haycock, J., J. Neurochem., **56**, 2139 (1991).
6. Lewis, D., et al., Neurosci., **54**, 477 (1993).
7. Haycock, J., Schizophrenia Res., **9**, 220 (1993).
8. Haycock, J., Analyt. Biochem., **208**, 397 (1993).

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