

Qty: 100 µl Rabbit anti-phospho-Tyrosine Hydroxylase [pS40]

Catalog No. 36-8600

Lot No.

Rabbit anti-phospho-Tyrosine Hydroxylase [pS40]

FORM

This polyclonal antibody is supplied as a 100 µl aliquot (sufficient for 10 mini-blots) in phosphate buffered saline containing 50% glycerol, 10 mM HEPES (pH 7.5), 150mM NaCl, and 100 µg/mL BSA. The antibody is epitope-affinity-purified from rabbit antiserum.

PAD: PS40

IMMUNOGEN

Synthetic phospho-peptide derived from the rat tyrosine hydroxylase (TH) protein.

SPECIFICITY

This antibody is specific for the ~60 kDa rat tyrosine hydroxylase protein, phosphorylated at Ser40, and does not react with the non-phosphorylated form of the TH protein.

REACTIVITY

Reactivity has been confirmed in rat PC-12 cell lysates stimulated with okadaic acid. Based on amino acid sequence homology, this antibody is also expected to react with human and mouse.

Sample	Western Blotting	Immuno- fluorescence	Immuno- histochemistry
Rat	+++	+++	+++
Mouse	ND	ND	ND
Human	ND	ND	ND
Immunogen	N/A	N/A	N/A

(Excellent +++, Good++, Poor +, No reactivity 0, Not applicable N/A, Not Determined ND)

USAGE

Working concentrations for specific applications should be determined by the investigator. Appropriate concentrations will be affected by several factors, including secondary antibody affinity, antigen concentration, sensitivity of detection method, temperature and length of incubations, etc. The suitability of this antibody for applications other than those listed below has not been determined. The following dilutions are recommended starting points for this product.

Western Blotting:	1: 1000
Immunofluorescence:	1: 1000
Immunohistochemistry:	1: 1000

STORAGE

PI368600

Store at 2-8°C for up to one month. Store at –20°C for long-term storage. Avoid repeated freezing and thawing.

(cont'd)

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(Rev 10/09) DCC-09-1614

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BACKGROUND

Tyrosine hydroxylase (TH, tyrosine 3-monooxygenase) is the eukaryotic enzyme that catalyzes the first, rate-limiting step in the biosynthesis of dopamine and other catecholamines from tyrosine.¹ TH requires O₂ and ferrous iron for the hydroxylation reaction it catalyzes. In mammals, TH is encoded by a single gene that is required for embryonic development and survival;² full-length cDNA for this enzyme has been obtained for rat, mouse, cow, *Drosophila*, macaque monkey, and human species.³ In all vertebrates, TH activity is closely regulated at many levels of expression, including gene transcription, RNA processing, stability of mRNA, feedback inhibition on enzyme, and protein kinase activation.²

The active tyrosine hydroxylase enzyme is a tetramer, with its active site located within its C-terminal region, where the physiological co-substrate binds. The N-terminus acts as a regulatory domain, and contains four serine residues, including Ser 19, Ser 31, and Ser40, that can be phosphorylated by protein kinase A (PKA), CaM kinase II (CaMKII), and protein kinase C (PKC).³ Ser40 is the major TH phosphorylation site of PKA and CaMKII in vertebrates.^{2,3} Phosporylation of TH at Ser40, and thus the synthesis of dopamine, has been observed to be influenced by many factors, including potassium ion concentration,⁴ activation of adenylyl cyclase,⁵ NMDA receptor activity,⁵ ERK1/2 activity,^{6,7} and the binding of 14-3-3 proteins.⁸

REFERENCES

- 1. Nagatsu T, et al. J Biol Chem 239:2910-2917, 1964.
- 2. Vie A, et al. J Biol Chem 274(24):16788-16795, 1999.
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- 4. Haycock JW, et al. J Neurochem 71(4):1670-1675, 1998.
- 5. Lindgren N, et al. J Neurochem 74:2470-2477, 2000.
- 6. Lindgren N, et al. *Eur J Neurosci* 15(4):769-773, 2002.
- 7. Salvatore MF, et al. J Neurochem 79(2):349-360, 2001.
- 8. Kleppe R, et al. *J Neurochem* 77(4):1097-1107, 2001.

RELATED PRODUCTS

PI368600

Product	Clone/PAD*	Cat. No.
Mouse anti-ERK1 + ERK2	ERK-7D8	13-6200
Rabbit anti-ERK1 + ERK2	Polyclonal	61-7400
Rabbit anti-14-3-3	BN	51-0700
Mouse anti-Dopamine Receptor 3	3A8	32-0900
Mouse anti-α-CaM Kinase II	CBa-2	13-7300
Mouse anti-β-CaM Kinase II	CBβ-2	13-9800
Goat anti-PKC (Pan)	Polyclonal	62-9700
Mouse anti-PKC-β	8/1	13-3700
Mouse anti-PKC-y	PKC66	13-3800
Protein A	Sepharose [®] 4B	10-1041
rec-Protein G	Sepharose [®] 4B	10-1241
*PAD: Polyclonal Antibody Designation		

Conjugate	ZyMAX™ Goat x Rabbit IgG (H+L)	ZyMAX™ Goat x Mouse IgG (H+L)
Purified	81-6100	81-6500
FITC	81-6111	81-6511
TRITC	81-6114	81-6514
Су™3	81-6115	81-6515
Cy™5	81-6116	81-6516
HRP	81-6120	81-6520
AP	81-6122	81-6522
Biotin	81-6140	81-6540

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