



PhosphoSolutions®
Antibodies that work™

Colorado Biosciences Park
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Anti-Phospho-Ser³¹ Tyrosine Hydroxylase

Catalog Number: p1580-31

Size: 100 µl

\$310.00

Product Description: Affinity purified rabbit polyclonal antibody

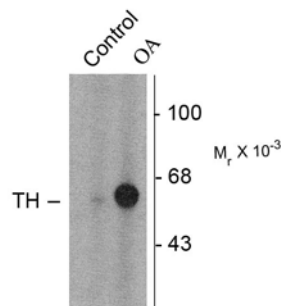
Applications: **WB:** 1:1000
IF (frozen sections; Witkovsky et al., 2000): 1:1000
IHC (frozen sections; Witkovsky et al., 2000): 1:1000

Antigen: Phosphopeptide corresponding to amino acid residues surrounding phospho-Ser³¹ of rat tyrosine hydroxylase (TH).

Species reactivity: The antibody has been directly tested for reactivity in Western blots in rat and mouse tissues. It is anticipated that the antibody will also work with non-human primate tissues based on the fact that this species has 100% homology with the amino acid sequence used as antigen.

Biological Significance: Tyrosine hydroxylase (TH) is the rate-limiting enzyme in the synthesis of the catecholamines dopamine and norepinephrine. TH antibodies can therefore be used as markers for dopaminergic and noradrenergic neurons in a variety of applications including depression, schizophrenia, Parkinson's disease and drug abuse (Kish et al., 2001; Zhu et al., 2000; Zhu et al., 1999). TH antibodies can also be used to explore basic mechanisms of dopamine and norepinephrine signaling (Witkovsky et al., 2000; Salvatore et al., 2001; Dunkley et al., 2004). The activity of TH is also regulated by phosphorylation (Haycock et al., 1982; Haycock et al., 1992; Jedynak et al., 2002). Phospho-specific antibodies for the phosphorylation sites on TH can be used to great effect in studying this regulation and in identifying the cells in which TH phosphorylation occurs.

Anti-Phospho Ser³¹ Tyrosine Hydroxylase



Western blot of PC-12 cells incubated in the absence (Control) and presence of okadaic acid (OA, 1 µM for 60 min) showing specific immunolabeling of the ~60k TH phosphorylated at Ser³¹.

Page 1 of 2

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 - Blue Ice or Dry Ice.

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

Antibody Specificity: Specific for the ~60k tyrosine hydroxylase protein phosphorylated at Ser³¹.

Quality Control Tests: Western blots performed on each lot.

References:

- Dunkley PR, Bobrovskaya L, Graham ME, Von Nagy-Felsobuki EI, Dickson PW (2004) Tyrosine hydroxylase phosphorylation: regulation and consequences. *J Neurochem* 91:1025-1043.
- Haycock JW, Ahn NG, Cobb MH, Krebs EG (1992) ERK1 and ERK2, two microtubule-associated protein 2 kinases, mediate the phosphorylation of tyrosine hydroxylase at serine-31 *in situ*. *Proc Natl Acad Sci (USA)* 89:2365-2369.
- Haycock JW, Bennett WF, George RJ, Waymire JC (1982) Multiple site phosphorylation of tyrosine hydroxylase. Differential regulation *in situ* by a 8-bromo-cAMP and acetylcholine. *J Biol Chem* 257:13699-13703.
- Jedynak JP, Ali SF, Haycock JW, Hope BT (2002) Acute administration of cocaine regulates the phosphorylation of serine-19,-31 and-40 in tyrosine hydroxylase. *J Neurochem* 82:382-388.
- Kish SJ, Kalasinsky KS, Derkach P, Schmunk GA, Guttman M, Ang L, Adams V, Furukawa Y, Haycock JW (2001) Striatal dopaminergic and serotonergic markers in human heroin users. *Neuropsychopharmacology* 24:561-567.
- Salvatore MF, Waymire JC, Haycock JW (2001) Depolarization-stimulated catecholamine biosynthesis: involvement of protein kinases and tyrosine hydroxylase phosphorylation sites *in situ*. *J Neurochem* 79:349-360.
- Witkovsky P, Gabriel R, Haycock JW, Meller E (2000) Influence of light and neural circuitry on tyrosine hydroxylase phosphorylation in the rat retina. *J Chem Neuroanat* 19:105-116.
- Zhu MY, Klimek V, Haycock JW, Ordway GA (2000) Quantitation of tyrosine hydroxylase protein in the locus coeruleus from postmortem human brain. *J Neurosci Meth* 99:37-44.
- Zhu MY, Klimek V, Dilley GE, Haycock JW, Stockmeier C, Overholser JC, Meltzer HY, Ordway GA (1999) Elevated levels of tyrosine hydroxylase in the locus coeruleus in major depression. *Biol Psychiatry* 46:1275-1286.

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