

Product Information

Anti-Dopamine Transporter

Developed in Rabbit
Whole Antiserum

Product Number **D 2442**

Product Description

Anti-Dopamine Transporter (DAT) is developed in rabbit using as immunogen, a synthetic peptide (sequence: LTNSTLINPPQTPVEAQE) of rat dopamine transporter (amino acid residues 42-59), conjugated to KLH.

Anti-Dopamine Transporter (DAT) recognizes rat dopamine transporter. The antibody cross-reacts with human, mouse, monkey, and dog. The antibody may be used in immunoblotting, immunoprecipitation, and immunohistochemistry.

Dopamine transporter (DAT) belongs to a family of biogenic amine transporters, which also includes norepinephrine, serotonin, and vesicular monoamine transporters. All three transporters arise from single genes with homology to members of a larger Na⁺, Cl⁻-dependent neurotransmitter transporter family.¹ Structural similarities include a putative 12 transmembrane-spanning domain, intracellular amino- and carboxy-tails and a large extracellular loop between transmembrane domains III and IV containing multiple N-glycosylation sites.² Multiple potential phosphorylation sites exist on intracellular domains, supporting recent evidence of kinase-mediated regulation of these transporters.³ The cDNA for the DAT has been cloned from rat,⁴ mouse,⁵ bovine,⁶ and human⁷ brains.

DAT is located on presynaptic nerve terminals and its main function is to remove dopamine from the extracellular space, such that the activity of DAT determines the length of time that dopamine is present in the extracellular space after it is released from the presynaptic neuron. The inhibition of dopamine uptake via DAT thus leads to significant enhancement of dopaminergic transmission.⁸

DAT is the primary site for the action of some antidepressants (e.g.: a tricyclic antidepressant, such as nomifensine), neurotoxins, such as MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine), as well as drugs of abuse, such as cocaine and amphetamine.⁹ Interestingly, although cocaine is comparatively potent at all three biogenic amine transporters, its addictive and euphoric properties have been attributed to the inhibition of dopamine uptake via DAT in the brain region called nucleus accumbens shell. DAT can also transport dopamine-specific neurotoxins in brain regions responsible for the control of movement (substantia nigra and nucleus accumbens core) and has thus been implicated in the vulnerability of neurons in models of Parkinson's disease.¹⁰

In addition to psychostimulant abuse and Parkinson's disease, other conditions that are characterized by enhanced dopamine transmission, such as Schizophrenia, Attention-deficit hyperactivity disorder and Tourette's syndrome might also benefit from the study of DAT.¹ Antibodies that specifically react with DAT may thus be used to study its normal physiological function, as well as to correlate its expression with in animal models of these pathological conditions.

Reagent

Anti-Dopamine Transporter is supplied as whole antiserum without additives or preservatives.

Storage/Stability

Store at -20 °C. For prolonged storage, freeze in working aliquots at -20 °C. Avoid repeated freezing and thawing. Storage in frost-free freezers is also not recommended. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

By immunoblotting, a minimum working antibody dilution of 1:100 is recommended using brain and cultured cells.

By immunoprecipitation, a minimum working antibody dilution of 1:100 is recommended.

By immunohistochemistry (light and electron microscopy), a working antibody dilution of 1:10,000-1:40,000 is recommended using brain and cultured cells.

Note: In order to obtain the best results in various techniques and preparations, we recommend determining optimal working dilutions by titration.

References

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