

**Anti-DBH-SAP**
TARGETED SAP CONJUGATE

*a tool for eliminating cells that express dopamine beta-hydroxylase in rat;
targeted via the antibody to dopamine beta-hydroxylase (DBH), eliminated via saporin*

Catalog Number: IT-03
Quantity: 25 micrograms, 100 micrograms, 250 micrograms, 1 milligram
Format: PBS (0.14 M Sodium Chloride; 0.003 M Potassium Chloride; 0.002 M Potassium Phosphate; 0.01 M Sodium Phosphate; pH 7.4), no preservative. Sterile-filtered.
Host: Mouse

Background: Targeted SAP conjugates are powerful and specific lesioning agents used in the technique known as Molecular Surgery. The ribosome-inactivating protein, saporin (from the seeds of the plant, *Saponaria officinalis*) is bound to a targeting agent (anything that is recognized on the cell surface and internalized). The targeted conjugate is administered to cells (*in vitro* or *in vivo*). The targeting agent seeks out and binds to its target on the cell surface. The conjugate is internalized, saporin breaks away from the targeting agent, and inactivates the ribosomes which causes protein inhibition and, ultimately, cell death. Cells that do not have the cell surface marker are not affected.

Anti-DBH-SAP is a highly specific noradrenergic lesioning agent. It specifically targets cells that express DBH. This vesicular enzyme is exposed to the exterior milieu upon release of noradrenaline and thus allows these cells to be targeted with saporin. The specificity of Anti-DBH-SAP correlates well with uptake of the antibody when injected intraventricularly. After systemic administration, animals have a massive reduction in plasma norepinephrine levels, indicating efficient targeting and sympathectomy. Unlike other lesioning methods, this molecular lesioning agent assures definitive ablation of the target neurons expressing rat DBH. Permanent and selective removal of cerebral noradrenergic innervation makes an important animal model for the study of drug effects (anti-hypertensives, opiates, stimulants, etc.), behavior (fear, depression, food intake), plasticity of other systems in response to loss, and primary autonomic failure.

Specificity & Preparation: This targeted toxin recognizes cells that express dopamine beta-hydroxylase in rat. Anti-DBH-SAP is a chemical conjugate of the mouse monoclonal antibody to dopamine beta-hydroxylase and the ribosome-inactivating protein, saporin.

Usage: Anti-DBH-SAP specifically eliminates cells that express dopamine beta-hydroxylase. All other cells are left untouched. It is useful in retrograde transport (see Wiley *et al*, 1989). **There may be lot-to-lot variation in material; working dilutions must be determined by end user. If this is a new lot, you must assess the proper working dilution before beginning a full experimental protocol.**

Storage: Gently spin down material 5-10 seconds in a microfuge before use. Store the material in undiluted aliquots at -20°C for 1-2 months. For longer term storage store the material at -80°C . Material should be aliquoted to a convenient volume and quantity to avoid repeated freezing and thawing that can damage the protein content. Under these conditions, the material has a very stable shelf-life. Thawing should be done at room temperature or on ice. The thawed solution should remain on ice until use.

Do not use a reducing agent (such as dithiothreitol, beta-mercaptoethanol or ascorbic acid) with this material. It will inactivate the toxin.

This material is an extremely potent cytotoxin. Handling should be done by experienced personnel. Gloves and safety glasses are required when handling this product. Care in disposal is mandatory; autoclaving or exposure to 0.2 M sodium hydroxide will inactivate the material. All labware that comes into contact with this material should be likewise treated.



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Selected References:

1. Harle P, Pongratz G, Albrecht J, Turner IH, Straub RH (2008) An early sympathetic nervous system influence exacerbates collagen-induced arthritis via CD4+CD25+ cells. *Arthritis Rheum* 58:2347-2355.
2. Harle P, Mobius D, Carr DJ, Scholmerich J, Straub RH (2005) An opposing time-dependent immune-modulating effect of the sympathetic nervous system conferred by altering the cytokine profile in the local lymph nodes and spleen of mice with type II collagen-induced arthritis. *Arthritis Rheum* 52:1305-1313.
3. Bitner RS, Nikkel AL (2002) Alpha-7 nicotinic receptor expression by two distinct cell types in the dorsal raphe nucleus and locus coeruleus of rat. *Brain Res* 938:45-54.
4. Kingery WS, Agashe GS, Guo TZ, Sawamura S, Davies MF, Clark JD, Kobilka BK, Maze M (2002) Isoflurane and nociception: Spinal alpha2A adrenoceptors mediate antinociception while supraspinal alpha1 adrenoceptors mediate pronociception. *Anesthesiol* 96:367-374.
5. Daniels D, Miselis RR, Flanagan-Cato LM (2001) Transneuronal tracing from sympathectomized lumbar epaxial muscle in female rats. *J Neurobiol* 48(4):278-290.
6. Schroeter S, Apparsundaram S, Wiley RG, Miner LH, Sesack SR, Blakely RD (2000) Immunolocalization of the cocaine- and antidepressant-sensitive 1-norepinephrine transporter. *J Comp Neurol* 420:211-232.
7. Blessing WW, Lappi DA, Wiley RG (1998) Destruction of locus coeruleus neuronal perikarya after injection of anti-dopamine-beta-hydroxylase immunotoxin into the olfactory bulb of the rat. *Neurosci Lett* 243:85-88.
8. Wiley RG, Stirpe F, Thorpe P, Oelmann TN (1989) Neuronotoxic effects of monoclonal anti-Thy 1 antibody (OX7) coupled to the ribosome inactivating protein, saporin, as studied by suicide transport experiments in the rat. *Brain Res* 505:44-54.

Control(s): Mouse IgG-SAP

Safety:

Good laboratory technique must be employed for safe handling of this product. This requires observation of the following practices:

1. Wear appropriate laboratory attire, including lab coat, gloves and safety glasses.
2. Do not pipet by mouth, inhale, ingest or allow product to come into contact with open wounds. Wash thoroughly any part of the body which comes into contact with the product.
3. Avoid accidental autoinjection by exercising extreme care when handling in conjunction with any injection device.
4. This product is intended for research use by qualified personnel only. It is not intended for use in humans or as a diagnostic agent. Advanced Targeting Systems is not liable for any damages resulting from the misuse or handling of this product.

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