

**Anti-SERT-SAP**  
TARGETED SAP CONJUGATE

*a tool for eliminating cells that express serotonin re-uptake transporter;  
targeted via a monoclonal antibody to the fourth extracellular domain of SERT, eliminated via saporin*

**Catalog Number:** IT-23  
**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-SERT-SAP utilizes a monoclonal antibody to the fourth extracellular domain of the serotonin re-uptake transporter (SERT). The sequence of the peptide antigen is identical in rat, mouse, human, and other mammalian species. SERT is the major determinant of serotonin inactivation following release at synapses, is the site of action for many tricyclic antidepressants and the SSRIs (serotonin-selective reuptake inhibitors), and is also targeted by a number of psychostimulants including cocaine, methylphenidate, and MDMA ‘ecstasy.’ SERT is produced from a single gene and is expressed in both the CNS and GI system.

Decreased serotonergic neurotransmission has been proposed to play a key role in the etiology of depression. Recent findings suggest that SERT might be linked to both neurotic and sexual behavior as well as to obsessive-compulsive disorder (OCD). Anti-SERT-SAP specifically eliminates cells expressing SERT making it an excellent tool for studying the serotonergic system which is known to modulate mood, emotion, sleep and appetite and thus is implicated in the control of numerous behavioral and physiological functions.

**Specificity & Preparation:** This targeted toxin recognizes cells that express SERT. The sequence of the peptide antigen is identical in rat, mouse, human, and other mammalian species. Anti-SERT-SAP is a chemical conjugate of a monoclonal antibody to the fourth extracellular domain of serotonin re-uptake transporter (SERT) and the ribosome-inactivating protein, saporin. This product is routinely tested by cytotoxicity assay.

**Usage:** Anti-SERT-SAP specifically eliminates SERT-expressing cells *in vitro* and *in vivo*. 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  $-20^{\circ}\text{C}$  for 1-2 months. For longer term storage store the material at  $-80^{\circ}\text{C}$ . 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.



### Anti-SERT-SAP TARGETED SAP CONJUGATE



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references.

#### Selected References:

1. Nattie EE, Li A, Richerson G, Lappi D (2002) Specific killing of rat medullary raphe 5-HT neurons by a serotonin transporter antibody-saporin conjugate reduced the ventilatory response to increased CO<sub>2</sub> during sleep and wakefulness. *Soc Neurosci Mtg*, Orlando FL, Abstract #221.3.
2. Lappi D, Kohls M, Majer K, Russell B, Blakely R, Richerson G (2002) Targeting serotonin re-uptake transporter (SERT)-expressing cells with a monoclonal antibody to an epitope from the extracellular domain of SERT: Results with a saporin conjugate. *4th Forum of European Neuroscience, Paris FRANCE*, Abstract #049.7.
3. Kohls MD, Majer KA, Russell BJ, Han Q, Blakely RD, Lappi DA (2001) A monoclonal antibody to an extracellular domain of the serotonin transporter: Characterization and targeting properties. *Soc Neurosci Mtg*, San Diego CA, Abstract #814.9.
4. 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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