ADVANCED TARGETING SYSTEMS

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Dermorphin-SAP / MOR-SAP

TARGETED SAP CONJUGATE

a tool for eliminating cells that express the mu-opioid receptor (MOR); targeted via dermorphin, eliminated via saporin

Catalog Number: IT-12
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.

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.
Dermorphin-SAP (MOR-SAP) targets and eliminates cells expressing the mu opioid receptor (MOR). MOR-expressing neurons have long been considered some of the most important cells in the nervous systems because of their participation in pain, pain control, addiction, gastrointestinal motility, and mast cell function, among others. This specific cytotoxin provides new methods for understanding these neurons and how they work. MOR-SAP is not suitable for retrograde transport.

Specificity and Preparation:
This targeted toxin (molecular weight 32 kDa) recognizes cells that express the mu-opioid receptor (MOR). MOR-SAP is a chemical conjugate of dermorphin and the ribosome-inactivating protein, saporin (Cat. #PR -01).

Usage and Storage:
MOR-SAP eliminates mu-opioid receptor (MOR) expressing cells. All other cells are left untouched. Not suitable for retrograde transport. **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.**
Gently spin down material before use; 5-10 seconds in a microfuge should be adequate. 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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Available Control(s): Blank-SAP

References:

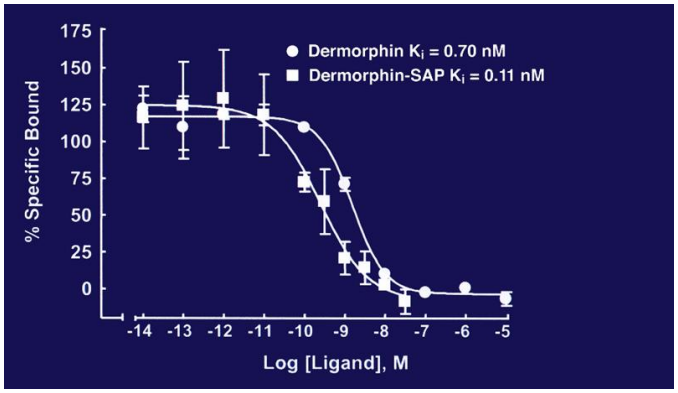
1. Burgess SE, Gardell LR, Ossipov MH, Malan Jr TP, Vanderah TW, Lai J, Porreca F (2002) Time-dependent descending facilitation from the rostral ventromedial medulla maintains, but does not initiate, neuropathic pain. *J Neurosci* 22(12):5129-5136.
2. Porreca F, Burgess SE, Gardell LR, Vanderah TW, Malan TP Jr, Ossipov MH, Lappi DA, Lai J (2001) Inhibition of neuropathic pain by selective ablation of brainstem medullary cells expressing the μ-opioid receptor. *J Neurosci* 21(14):5281-5288.
3. Lappi DA, Wiley RG (2000) Entering through the doors of perception: characterization of a highly selective Substance P receptor-targeted toxin. *Neuropeptides* 34(5):323-328.

References for Receptor Expression:

1. Chieng BC, Christie MJ, Osborne PB (2006) Characterization of neurons in the rat central nucleus of the amygdala: cellular physiology, morphology, and opioid sensitivity. *J Comp Neurol* 497(6):910-927.
2. Gray AC, Coupar IM, White PJ (2006) Comparison of opioid receptor distributions in the rat central nervous system. *Life Sci* 79(7):674-685.
3. Teodorov E, Modena CC, Sukikara MH, Felicio LF (2006) Preliminary study of the effects of morphine treatment on opioid receptor gene expression in brain structures of the female rat. *Neuroscience* 141 (3):1225-1231.
4. Drake CT, Chang PC, Harris JA, Milner TA (2002) Neurons with mu opioid receptors interact indirectly with enkephalin-containing neurons in the rat dentate gyrus. *Exp Neurol* 176(1):254-261.

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.

To view protocol(s) for this and other products please visit: www.ATSbio.com/support/protocols



Inhibition of binding of DAMGO ([D-Ala(2),N-Me-Phe(4), Gly(5)-ol]-enkephalin) to mu opioid receptor (MOR) by dermorphin and dermorphin-SAP (MOR-SAP, Cat. #IT-12). Data demonstrate retention of binding after conjugation of dermorphin to saporin.