



Product Information

Anti-Neuropeptide Y (NPY)

Developed in Rabbit
Delipidized, Whole Antiserum

Product Number **N 9528**

Product Description

Description

Anti-Neuropeptide Y (NPY) is developed in rabbits using synthetic Neuropeptide Y (porcine) conjugated to KLH as the immunogen.

Anti-Neuropeptide Y reacts with neuropeptide Y (NPY) conjugated to BSA in dot blot. Cross-reactivity is observed by dot blot with neuropeptide Y (human), and neuropeptide Y fragments including NPY(18-36), NPY(13-36) and peptide YY (PYY), (human) conjugated to BSA. The antiserum shows no cross-reactivity in dot blot with substance P, neurokinin A, neurokinin B, vasoactive intestinal peptide (VIP), calcitonin gene-related peptide (CGRP) (rat), calcitonin, and somatostatin conjugated to BSA, or BSA. The antiserum reacts with NPY-containing neurons (cell bodies, axons, and dendrites) in frozen sections of rat brain obtained following perfusion fixation with 4% paraformaldehyde. Absorption studies show that specific staining of tissue may be inhibited following pre-incubation of the antiserum with 10 μ M neuropeptide Y (porcine).

Anti-Neuropeptide Y may be used for the immunolocalization of NPY using various immunohistochemical methods including formalin-fixed, frozen, or Vibratome sections of rat, cat, porcine, bovine, monkey, and human brain. The product may be used in immunodetection of NPY using various immunoassays such as dot blot, RIA, and ELISA.

NPY a 36 amino acid peptide amide isolated from porcine brain, is a major regulatory neuropeptide in the mammalian central and peripheral nervous systems. NPY belongs to the pancreatic polypeptide family of peptides which are characterized by a common tertiary structure.^{1,2} Within this family, an intestinal peptide hormone, peptide YY (PYY), is most closely related to NPY. In the central nervous system (CNS) NPY is

considered to be involved in regulation of blood pressure, memory processing, circadian rhythm, and stimulation of food intake.³ In the peripheral nervous system (PNS), NPY evokes potent vasoconstrictor activity and acts as a neurotransmitter/neuromodulator of sympathetic neurons and adrenal glands.^{3,4,5} NPY is one of the most abundant peptides found in the CNS. NPY and NPY mRNA are widely distributed in the brain. High levels of NPY are present in the cerebral cortex, amygdaloid nuclei, hippocampal formation, and hypothalamus.^{6,7,8} In the PNS, NPY is widely distributed in sympathetic neurons that innervate vascular smooth muscle, heart, and urogenital tract. In these neurons NPY is mainly co-localized with norepinephrine and is considered to function as a neurotransmitter to pre-synaptically inhibit noradrenergic neurotransmission.^{4,9,10}

The biological actions of NPY in the brain and periphery are mediated by at least two different NPY receptors, designated Y_1 and Y_2 receptor subtypes.^{11,12,13} Cardiovascular effects and centrally evoked food intake potential are activities predominantly mediated by the Y_1 receptors, whereas the Y_2 receptors, the major subtype in the CNS, are mainly involved in the pre-synaptic inhibition of neurotransmitter release and facilitation of memory retention. Post-synaptic NPY receptors are apparently of both the Y_1 and Y_2 type. NPY receptors are coupled to at least two different signal transduction mechanisms, the adenylate cyclase pathway (decrease in cAMP), and the phosphoinositol/ IP_3 pathway.¹¹ Antibodies that react specifically with NPY are useful for the study of the mode of action, differential tissue expression, and intracellular and subcellular localization of NPY in the central and peripheral nervous systems.

Reagents

The product is provided as whole antiserum with 0.1% sodium azide as a preservative.

Precautions and Disclaimer

Due to the sodium azide content a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, solution may be frozen in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify by centrifugation before use.

Product Profile

Protein Concentration: Determined by Biuret.

Working Dilutions

1. A minimum working dilution of 1:10,000 was determined by dot blot immunoassay using Neuropeptide Y-BSA (0.03 - 0.25 ng/dot).
2. A minimum working dilution of 1:8,000 was determined by indirect immunohistology using frozen sections of rat brain perfusion-fixed with 4% paraformaldehyde.

In order to obtain best results in different preparations, it is recommended that each individual user determine their optimal working dilutions by titration assay.

RIA Dilution Instructions

The minimum working dilution is determined to be 1:10,000 using 20 pg/tube of ¹²⁵I-labeled neuropeptide Y in a second antibody and polyethylene glycol RIA.

It is recommended that the antiserum first be evaluated in the particular assay system chosen due to differences in systems and procedures.

RIA Specificity

Specificity of the antiserum is defined as the ratio of antigen concentration to cross-reactant concentration at 50% inhibition of maximum binding. The cross-reactivity data obtained in the second antibody-PEG ¹²⁵I RIA system is as follows:

<u>Cross-Reactant</u>	<u>%Cross-Reactivity</u>
Neuropeptide Y (porcine)	100
Neuropeptide Y (human)	≤100
Neuropeptide Y(13-36) (porcine)	≤5.0
Neuropeptide Y (18-36) (human, porcine)	≤5.0
Peptide YY (porcine)	≤1.0
Vasoactive Intestinal Peptide	≤0.1
Pancreatic Polypeptide	≤1.0
Somatostatin	≤0.1
Insulin (human)	≤0.1
Amylin-NH ₂	≤0.1

RIA Sensitivity

Sensitivity is defined as the 90% intercept of a B/B₀ standard curve. In the above system the sensitivity has been found to be 20 pg/tube.

RIA Affinity Constant

The affinity constant (K_a) is determined by a Scatchard plot using this RIA system.

K_a = Minimum 5.0 x 10¹⁰ L/mole

References

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