

Product Information

Anti-Calcitonin Gene Related Peptide

produced in rabbit, whole antiserum, delipidized

Product Number **C8198**

Synonym: Anti-CGRP

Product Description

Anti-Calcitonin Gene Related Peptide is produced in rabbit using synthetic CGRP (rat) conjugated to KLH as the immunogen. The antiserum has been treated to remove lipoproteins.

Specificity

Anti-Calcitonin Gene Related Peptide reacts with CGRP (rat) in dot blot immunoassay. Cross-reactivity is observed with CGRP (human) and β -CGRP (human). The antiserum shows no cross-reactivity with substance P, vasoactive intestinal peptide, neuropeptide Y (porcine), calcitonin, or somatostatin. The antiserum reacts with CGRP-containing fibers and terminals in frozen sections of rat brain obtained after perfusion fixation with 4% paraformaldehyde. Specific staining of the tissue is inhibited by pre-incubation of the antiserum with 10 μ M CGRP (rat).

Description

Calcitonin Gene Related Peptide (CGRP) is a 37 amino acid cyclic peptide with a wide range of biological activities, including potent cardiovascular (peripheral vasodilation, hypotension, tachycardia) and gastrointestinal effects.^{1,2} CGRP belongs to a small family of peptides encoded by the calcitonin/CGRP gene complex. CGRP is generated by alternative processing of the initial calcitonin gene mRNA transcripts, yielding separate mRNAs encoding the precursors of CGRP and calcitonin.³ The calcitonin/CGRP gene complex consists of at least two genes (α and β), encoding for two forms of CGRP: α -CGRP (CGRP-I) and β -CGRP (CGRP-II).⁴ CGRP- α and - β have been isolated from rat and human tissue, and differ in one or three amino acids, respectively.^{4,5} The sequence of CGRP is highly conserved across species (human, rat, chicken), and reveals limited structural homology with calcitonin.

CGRP is synthesized and co-localized with calcitonin in the parafollicular C-cells of the thyroid gland and in medullary thyroid carcinoma.^{5,6} CGRP is principally considered a neuropeptide widely distributed in the central and peripheral nervous systems.^{3,5-10} CGRP is often found to coexist with other peptides or classical neurotransmitters.⁷⁻⁹

CGRP is colocalized with substance P (SP) and somatostatin in primary afferent sensory neurons, (i.e., in the dorsal horn of the spinal cord, dorsal root ganglia, and spinal trigeminal ganglia and nucleus,⁷⁻⁸) and with acetylcholine in motoneurons.¹¹ CGRP is probably involved with substance P in mediating neurogenic inflammation and transmission of pain stimuli via the peripheral nervous system. In the central nervous system (CNS), CGRP is thought to act as a neurotransmitter or neuromodulator, particularly in the regulation of autonomic (e.g., cardiovascular, respiratory, gastrointestinal, taste, food intake and sleep) and limbic functions.^{1,12} CGRP is broadly distributed and especially concentrated in certain areas of the hypothalamus, thalamus (i.e., periventricular gray matter that also contains dopamine), amygdala nuclei, and certain brainstem nuclei.⁷⁻⁹ In the PNS, CGRP is present in nerves of the gastrointestinal tract, cardiovascular, respiratory, and urogenital systems.^{10,12} Circulating CGRP is derived mainly from perivascular and cardiac nerves. The released peptide promotes potent vasodilation of cerebral, coronary and cutaneous vessels, causing hypotension and stimulation of cardiac contraction. The actions of CGRP are apparently mediated by highly specific CGRP receptors linked to adenylate cyclase.

CGRP binding sites are present in membrane homogenates of human and rat CNS, heart and spleen.^{7,13,14} In particular, high concentrations of CGRP receptors are found in the cerebellum (molecular and Purkinje layer) and spinal cord. Antibodies that react specifically with CGRP are useful for the study of the mechanism of action, differential tissue expression, and intracellular and subcellular localization of CGRP in the CNS and PNS.

Uses

Anti-Calcitonin Gene Related Peptide may be used for the immunodetection of CGRP using various immunoassays including immunodot blot and ELISA. The antibody will localize CGRP by various immunohistochemical methods using formalin-fixed, frozen or Vibratome sections of rat, cat, porcine, bovine, monkey and human brain.

Reagents

Supplied as a liquid containing 0.1% sodium azide as a preservative.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Protein Concentration: Determined by Biuret.

Working Dilutions

Dot blot immunoassay: a working dilution of at least 1:10,000 was determined using CGRP (rat) at 0.06-0.25 µg/dot

Dot Blot specificity was determined using 0.06-0.25 µg/dot

Cross reactivity data obtained as follows:

vs CGRP peptide (rat) positive
vs CGRP peptide (human) positive to weak positive
vs beta-CGRP peptide (human) positive
vs Substance P negative
vs VIP (vasoactive intestinal pept.) negative
vs Norepinephrine Y (porcine) negative
vs Calcitonin negative
vs Somatostatin negative
vs CGRP (8-37) negative
vs Amylin (8-37) negative

Indirect Immunohistology: a working dilution of at least 1:8,000 was determined using frozen sections of rat brain perfusion-fixed with 4% paraformaldehyde.

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

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

Storage

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

References

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