

Monoclonal Anti-Calcitonin Gene-Related Peptide

clone CD8, produced in mouse, purified immunoglobulin

Catalog Number **C9487**

Synonym: Anti-CGRP

Product Description

Monoclonal Anti-Calcitonin Gene-Related Peptide (IgG1 isotype) is generated from the hybridoma CD8 produced by mice using as immunogen a synthetic fragment of C-terminal rat α -calcitonin gene-related peptide (CGRP) glutaraldehyde conjugated to bovine serum albumin. It is purified from the exhausted supernatant by chromatography.

Monoclonal Anti-Calcitonin Gene-Related Peptide recognizes human and guinea pig CGRP by immunohistochemistry, immunocytochemistry, and indirect immunofluorescence. This antibody does not appear to stain motor cells in the ventral horn of the rat spinal cord.

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 They 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} Principally considered a neuropeptide widely distributed in the central and peripheral nervous systems, CGRP is often found to coexist with other peptides or classical neurotransmitters.^{3,5,7,9-10} It is co-localized with substance P 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 mediation of 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 vasodilatation 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.

Reagent

Solution in PBS containing 1% BSA and $\leq 0.1\%$ sodium azide.

Precautions and Disclaimer

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

Storage/Stability

Store at -20 °C

For prolonged storage, freeze in working aliquots at -20 °C. Avoid repeated freezing and thawing. Do not store in frost-free freezer.

Product Profile

Immunohistochemistry: a working antibody dilution of 1:200-1:1,000 (overnight incubation at 4 °C) is recommended in formalin-fixed, paraffin-embedded sections or cryostat sections using human tissues (medullary carcinoma of the thyroid, spinal cord, and blood vessels) or guinea pig tissues (spinal cord and brain). Protease digestion may be necessary to enhance immunostaining using 0.1% trypsin in phosphate buffered saline (37 °C for 5-10 minutes) or 0.4% pepsin in 0.01 N HCl (37 °C for 20-40 minutes). Alternately, high temperature antigen retrieval may also enhance immunostaining.

Indirect immunofluorescence: a working dilution of ~1:500 (overnight incubation at 4 °C) is recommended.

Note: In order to obtain the best results in various techniques and preparations we recommend determining optimal working dilutions by titration.

References

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TD,PHC 03/17-1