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PGCG Control Peptide

Alternate names: PGC-G, Particulate Guanylyl Cyclase G

Catalog No.: AP10268CP-N

Quantity: 0.1 mg

Background: Cyclic GMP (cGMP), a key messenger in several signal transduction pathways, the intracellular levels of cGMP ate maintained by the activity of opposing enzymes: synthesizing gualylyl cyclases (GC) and hydrolyzing phosphodiesterases (PDEs). The synthesizing enzymes (GCs) are found in two forms: cytosolic (soluble) and membrane-bound (particulate), while they share similar structural characteristics, they differ in their mechanisms of physiological regulations. Most importantly, sGC contains a heme group and binds NO that activates the enzyme, while particulate GC is stimulated by natriuretic peptides. Membrane-bound guanylyl cyclases (GCs) are peptide hormone receptors whereas the cytosolic isoforms are receptors for nitric oxide. Particulate GC (PGCs) have 7 different isoforms, PGC-A through PGC-G and are expressed in most tissues in isoform specific manner (See Table 1). Plasma membrane forms of guanylyl cyclase have been shown to function as natriuretic peptide receptors. In response to G-protein couples receptor stimulation, the cGMP can be produced from GTP by either cytoplasmic, soluble guanylate cyclase (sGC) are heterodimers (a & b polypeptide chains), that are stimulated by nitric oxide and carbon monoxide or by particulate membrane-bound guanylyl cyclases which are activated by a complex mechanism by natriuretic peptides. There is significant structural homology among various PGCs, there is a large N-terminal extracellular domain (ECD), a single TMD and a large intracellular domain with protein kinase activity (KLD), a C-terminal catalytic domain (CD) and in between is a dimmerization domain (DD). Two cDNA clones isolated from rat eye cDNA library encodes for two membranes associated guanylate cyclase E and F. The expression of PGC-F is confined to eye, none of the ligand kown to stimulate other guanylate cyclases failed to stimulate PGC-E and F subtype. Tus both PGC-E and PGC-F are considered as orphan receptors. The PGC-F structure resembles most closely with other sensory PGC isoforms, the conservations are in the intracellular kinase like and catalytic domains, and is most divergent at N and C-terminal regions. The PGC-F is expressed only in retina (1). It is suggested that membrane receptor GCs may be involved in the control of inner ear electrolyte and fluid composition whereas NO-stimulated GC isoforms mainly participate in the regulation of blood flow and supporting cell physiology (2). At present PGC-E and PGC-F ligands are not known and they fall under Orphan Receptor category.

Format: **State:** Liquid synthetic peptide

Description: Antigenic blocking peptide for AP10268PU-N

Storage: Store (in aliquots) at -20 °C. Avoid repeated freezing and thawing.
Shelf life: one year from despatch.

General Readings: 1. Yang R. B., Foster D. C., Gabers. D. L., Fullle. H. J. Proc. Natl. Acad. Sci. USA 92, 602-606, 1995.