

PGCE control peptide

Alternate names: PGC-E, Particulate Guanylyl Cyclase E

Catalog No.: AP10266CP-N

Quantity: 0.1 mg

Background: Cyclic GMP (cGMP), a key messenger in several signal transduction pathways, the intracellular levels of cGMP are maintained by the activity of opposing enzymes: synthesizing guanylyl 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. Plasma membrane forms of guanylyl cyclase have been shown to function as natriuretic peptide receptors. In response to G-protein coupled 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. 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). 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 dimerization domain (DD). The particulate GC-E gene is a single 18 kb genomic clone that have 20 exons and 19 introns. The PGC-E 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-E 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 AP10266PU-N

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

General Readings:

1. Johnston JP, Farhangfar F, Aparicio JG, Nam SH, Applebury ML. The bovine guanylate cyclase GC-E gene and 5' flanking region. *Gene*. 1997 Jul 9;193(2):219-27. PubMed PMID: 9256080.
2. Seebacher T, Beitz E, Kumagami H, Wild K, Ruppertsberg JP, Schultz JE. Expression of

membrane-bound and cytosolic guanylyl cyclases in the rat inner ear. Hear Res. 1999 Jan;127(1-2):95-102. PubMed PMID: 9925020.