# Proguanylin Human E. coli

## Product Data Sheet

**Type:** Recombinant
**Source:** E. coli
**Species:** Human
**Other names:** Guanylate cyclase activator 2A, Guanylate cyclase-activating protein 1, Guanylate cyclase-activating protein I, GCAP-I, GUCA2A, GUCA2

**Cat. No.:**
RD172046100 (0.1 mg)

## Description

Total 104 AA. MW: 11,5 kDa (calculated). UniProtKB acc.no. Q02747 (Val22-Cys115). N-terminal His-tag (10 extra AA). Protein identity confirmed by LC-MS/MS.

## Introduction to the Molecule

Heat-stable enterotoxins (STa) are small, cysteine-rich peptides secreted by *Escherichia coli* that are able to induce diarrhea through the stimulation of an intestine-specific receptor-guanylyl cyclase known as STaR. Binding of STa to STaR induces a dramatic increase in the cGMP content of the cell; the increase, in turn, inhibits salt absorption and stimulates chloride secretion. This imbalance of ions is accompanied by a massive accumulation of water in the gut that gives rise to the diarrhea and dehydration characteristic of enterotoxin activity. The identification of a receptor for STa on intestinal brush border membranes suggested the existence of an endogenous activator, described guanylin, a 15-amino acid peptide purified from rat small intestine, as a potential ligand for the STaR. This peptide shares sequence similarity with STa; see also uroguanylin. The molecular cloning of the human and mouse cDNAs encoding guanylin was reported. The sequences demonstrated that guanylin is present at the C-terminal end of a larger precursor protein. Expression in mammalian cells indicated that the 94-amino acid proguanylin is inactive. The biologically active guanylin can be released by either chemical or enzymatic treatment of proguanylin. By Northern blot analysis and in situ hybridization, showed that expression of guanylin mRNA is restricted to cells of the intestinal epithelium, specifically the Paneth cells at the base of the small intestinal crypts. These results demonstrate that guanylin is an endogenous activator of STaR isolated a cDNA encoding an apparent precursor of guanylin from a human intestinal cDNA library. The mRNA was expressed at high levels in human ileum and colon. In the mouse, interspecific backcross analysis used to map the Guca2 gene to the distal half of mouse chromosome 4 in a region of homology with human chromosome 1p. By fluorescence *in situ* hybridization mapped the GUCA2 gene to human 1p35-p34 Guanylin is thought to modulate intestinal water/electrolyte transport in a paracrine mode reported the nucleotide sequence of the gene, the characteristics of its circulating molecular form, and its localization in enterochromaffin cells of the gut. The gene, approximately 2.6 kb in size, consists of 3 exons interrupted by 2 introns. The hormonal form of guanylin is a 94-amino acid peptide with a molecular mass of 10.3 kDa. Guanylin is synthesized by gut enterochromaffin cells as a prohormone of 115 amino acids and is processed to the molecular form of 94 amino acids circulating in the blood.

## Research topic

Others, Renal disease

## Amino Acid Sequence

MKHHHHHHAS VTVQDGNFSF SLESVKKLKD LQEPQEPRVG KLRNFAPIPG EPVVPILCSN PNFPEELKPL CKEPNAQEIL QRLEEIAEDP GTCEICAYAA CTGC

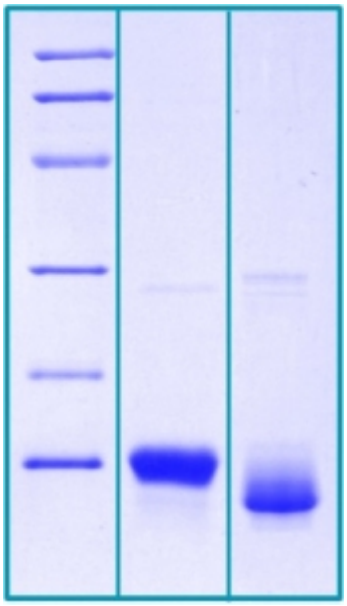
## Source

E. coli

## Purity

Purity as determined by densitometric image analysis: > 90%

## SDS-PAGE gel



14% SDS-PAGE separation of Human Proguanylin
1. M.W. marker - 14, 21, 31, 45, 66, 97 kDa
2. reduced and heated sample, 2.5µg/lane
3. non-reduced and non-heated sample, 2.5µg/lane

## Endotoxin

< 1.0 EU/ug

## Formulation

Filtered (0,4 µm) and lyophilized in 0.5 mg/mL in deionized H2O.

## Reconstitution

Add deionized water to prepare a working stock solution of approximately 0.5 mg/mL and let the lyophilized pellet dissolve completely. Filter sterilize your culture media/working solutions containing this non-sterile product before using in cell culture.

## Shipping

At ambient temperature. Upon receipt, store the product at the temperature recommended below.

## Storage, Stability/Shelf Life

Store lyophilized protein at -80°C. Lyophilized protein remains stable until the expiry date when stored at -80°C. Aliquot reconstituted protein to avoid repeated freezing/thawing cycles and store at -80°C for long term storage. Reconstituted protein can be stored at 4°C for a limited period of time; it does not show any change after five days at 4°C.

## Quality Control Test

BCA to determine quantity of the protein.
SDS PAGE to determine purity of the protein.
LAL TEST to determine endotoxin level.

## Applications

ELISA, Western blotting

## Note

This product is intended for research use only.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