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 98 AA. MW: 11 kDa (calculated). 96 AA of the recombinant human Proguanylin and two N-Terminal extra AA (highlighted).

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. The binding of STa to STaR induces a dramatic increase in the cGMP content of the cell. This, on the other hand, inhibits salt absorption and stimulates chloride secretion. The imbalance of ions is accompanied by a massive accumulation of water in the gut, which gives rise to the diarrhea and dehydration characteristic of the enterotoxin activity. The detection of a receptor for STa on intestinal brush border membranes indicates the existence of an endogenous activator , as a potential ligand for the STaR. This activator is guanylin, a 15-amino acid peptide purified from rat small intestine. This peptide shares sequence similarity with STa. 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

GPVTVQDGNF SFSLESVKKL KDLQEPQEPR VGKLRNFAPI PGEPVVPILC SNPNFPEELK PLCKEPNAQE ILQRLEEIAE DPGTCEICAY AACTGC

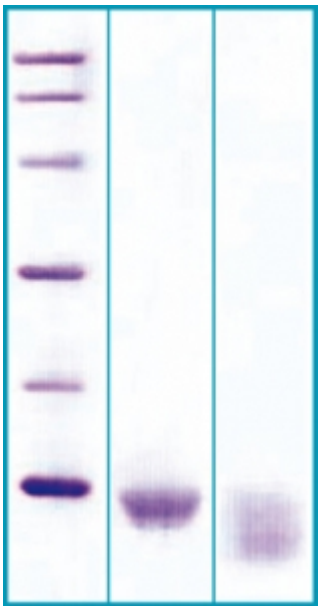
Source

E. coli

Purity

>95%

SDS-PAGE gel



12% SDS-PAGE separation of Human Proguanylin
1. M.W. marker - 14, 21, 31, 45, 66, 97 kDa
2. reduced and heated sample, 5µg/lane
3. non-reduced and non-heated sample, 5µg/lane

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. Product is not sterile! Please filter the product by an appropriate sterile filter before using it in the cell culture.

Shipping

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

Storage, Stability/Shelf Life

Store lyophilized protein at -20°C. Lyophilized protein remains stable until the expiry date when stored at -20°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 two weeks at 4°C.

Quality Control Test

BCA to determine quantity of the protein.
SDS PAGE to determine purity of the protein.

Applications

Western blotting

Note

This product is intended for research use only.

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