

Gene Section

Mini Review

TFF2 (TreFoil Factor 2)

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Identity

Other names: SP (Spasmolytic Polypeptide)

HGNC (Hugo): TFF2

Location: 21q22.3

Local order: Belongs to the TFF cluster

DNA/RNA

Description

5.1 kb gene, 4 exons.

Transcription

600 bp.

Protein

Description

Precursor: 129 amino acids; mature peptide: 106 amino acids; 3-dimensional structure was solved; the 129 amino acids TFF2 protein contains a signal peptide; the mature secreted peptide of 106 amino acids contains two TFF (TreFoil Factor) domains and one acidic C-terminal domain.

Expression

Under normal condition, TFF2 is expressed in mucus neck cells of the fundus, basal cells of the antral and pyloric glands and by the Brunner's glands of the duodenum.

Localisation

Secreted in gastric fluid.

Function

In repair and epithelial restitution of the gastrointestinal mucosa.

Homology

TFF2 belongs to the Trefoil peptide Family (TFF) and possesses two tandemly duplicated TFF motifs each being homologous to the TFF motif of TFF1 and TFF3. The TFF motif spans about 40 amino acids and is formed by 6 conserved residues involved in specific disulfides bridges.

Implicated in

TFF2 was found implicated in inflammatory bowel diseases, cancers of gastrointestinal organs such as stomach and pancreas; in contrast to TFF1 and TFF3, TFF2 expression was not found in breast carcinomas

References

Thim L, Thomsen J, Christensen M, Jørgensen KH. The amino acid sequence of pancreatic spasmolytic polypeptide. *Biochim Biophys Acta*. 1985 Mar 1;827(3):410-8

Rio MC, Bellocq JP, Daniel JY, Tomasetto C, Lathe R, Chenard MP, Batzenschlager A, Chambon P. Breast cancer-associated pS2 protein: synthesis and secretion by normal stomach mucosa. *Science*. 1988 Aug 5;241(4866):705-8

Thim L. A new family of growth factor-like peptides. 'Trefoil' disulphide loop structures as a common feature in breast cancer associated peptide (pS2), pancreatic spasmolytic polypeptide (PSP), and frog skin peptides (spasmolysins). *FEBS Lett*. 1989 Jun 19;250(1):85-90

Tomasetto C, Rio MC, Gautier C, Wolf C, Hareuveni M, Chambon P, Lathe R. hSP, the domain-duplicated homolog of pS2 protein, is co-expressed with pS2 in stomach but not in breast carcinoma. *EMBO J*. 1990 Feb;9(2):407-14

Rio MC, Chenard MP, Wolf C, Marcellin L, Tomasetto C, Lathe R, Bellocq JP, Chambon P. Induction of pS2 and hSP genes as markers of mucosal ulceration of the digestive tract. *Gastroenterology*. 1991 Feb;100(2):375-9

Theisinger B, Welter C, Seitz G, Rio MC, Lathe R, Chambon P, Blin N. Expression of the breast cancer associated gene pS2 and the pancreatic spasmolytic polypeptide gene (hSP) in diffuse type of stomach carcinoma. *Eur J Cancer*. 1991;27(6):770-3

Welter C, Theisinger B, Seitz G, Tomasetto C, Rio MC, Chambon P, Blin N. Association of the human spasmolytic polypeptide and an estrogen-induced breast cancer protein (pS2) with human pancreatic carcinoma. *Lab Invest*. 1992 Feb;66(2):187-92

Gajhede M, Petersen TN, Henriksen A, Petersen JF, Dauter Z, Wilson KS, Thim L. Pancreatic spasmolytic polypeptide: first three-dimensional structure of a member of the mammalian trefoil family of peptides. *Structure*. 1993 Dec 15;1(4):253-62

Lefebvre O, Wolf C, Kédinger M, Chenard MP, Tomasetto C, Chambon P, Rio MC. The mouse one P-domain (pS2) and two P-domain (mSP) genes exhibit distinct patterns of expression. *J Cell Biol*. 1993 Jul;122(1):191-8

Wright NA, Poulsom R, Stamp G, Van Noorden S, Sarraf C, Elia G, Ahnen D, Jeffery R, Longcroft J, Pike C. Trefoil peptide gene expression in gastrointestinal epithelial cells in

inflammatory bowel disease. *Gastroenterology*. 1993 Jan;104(1):12-20

Playford RJ, Marchbank T, Chinery R, Evison R, Pignatelli M, Boulton RA, Thim L, Hanby AM. Human spasmolytic polypeptide is a cytoprotective agent that stimulates cell migration. *Gastroenterology*. 1995 Jan;108(1):108-16

Babyatsky MW, deBeaumont M, Thim L, Podolsky DK. Oral trefoil peptides protect against ethanol- and indomethacin-induced gastric injury in rats. *Gastroenterology*. 1996 Feb;110(2):489-97

Seib T, Blin N, Hilgert K, Seifert M, Theisinger B, Engel M, Dooley S, Zang KD, Welter C. The three human trefoil genes TFF1, TFF2, and TFF3 are located within a region of 55 kb on chromosome 21q22.3. *Genomics*. 1997 Feb 15;40(1):200-2

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