GASTRIN-RELEASING PEPTIDE AS A GROWTH FACTOR IN COLORECTAL CANCER

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Gastrin-releasing peptide (GRP) is a small regulatory peptide involved in the progression of many cancers including breast, prostate, lung, kidney and colon. Like gastrin, GRP is produced by sequential proteolysis and amidation of a much larger precursor of 125 amino acids. Our laboratory discovered a larger-than-expected GRP in the pregnant uterus and recent experiments have examined the role of GRP in uterine and colorectal cancer (CRC). This study will characterize the forms of GRP produced in patients with CRC and in CRC cell lines, express the precursor forms of GRP as glutathione-S-transferase fusion proteins in E. coli and purify them by reverse phase HPLC after cleavage of the fusion protein with thrombin.

We will also compare the ability of the precursor and mature GRPs to stimulate the growth of normal colon and CRC cell lines, and in various mouse models of colon cancer.

Techniques:

Cell culture
Radioimmunoassays and ELISA
Western blots
Recombinant peptides
HPLC
Cell transfections
RT-PCR
Animal models of disease

Publications:

Patel O, Dumesny C, Shulkes A, Baldwin GS Recombinant C-Terminal fragments of the Gastrin-Releasing Peptide precursor are bioactive Cancer Letters 2007; 254:87-93.

Patel O, Dumesny C, Giraud AS, Baldwin GS, Shulkes A Amidated and glycine-extended gastrin-releasing peptide stimulate proliferation and migration of a colorectal cancer cell line via the same receptor. Biochem Pharmacol. 2004;68:2129-42.

Patel O, Shulkes A and Baldwin GS. Gastrin-Releasing Peptide and cancer. Biochimica et Biophysica Acta-Reviews on Cancer 2006; 1766:23-41.

Houli N, Loh SW, Giraud AS, Baldwin GS, Shulkes A. Mitogenic effects of both amidated and glycine-extended gastrin-releasing peptide in normal and azoxymethane treated rat colon Regulatory Peptides 2006; 134: 9-16.