

STUDIES ON GASTROINTESTINAL HORMONES BY RADIOIMMUNO-  
ASSAY - (IV) RADIOIMMUNOASSAY OF SECRETIN

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In a series of our previous reports the results of RIA studies on secretin were presented. This study concerns the mean fasting serum secretin and gastric levels and possible relationships between the two in 148 subjects including 35 normal subjects, 41 patients with uncomplicated duodenal and 64 with scarred duodenal ulcer. With the secretin kit used in this study the fasting serum secretin level could be assayed to a minimum of 50 pg/ml. In cases where the mean fasting serum secretin level (abbr. M) was lower than 50 pg/ml, therefore, the values for M assumed to be 50 pg/ml and 0 pg/ml respectively were expressed in terms of an inequality. The expression thus obtained in different groups of subjects was as follows:  $96 < M < 101$  pg/ml for normal subjects;  $93 < M < 103$  pg/ml for patients with uncomplicated duodenal ulcer;  $90 < M < 100$  pg/ml for those with scarred duodenal ulcer. With a view to inquiring into the relationship between secretin and gastrin, calculation was made of the ratio, R, of the secretin level to the simultaneously determined gastrin level defined as 1. No significant difference was present between groups in this regard:  $1.12 < R < 1.19$  for normal subjects;  $1.02 < R < 1.13$  for patients with uncomplicated duodenal ulcer;  $1.18 < R < 1.32$  for those with scarred duodenal ulcer. Nor any correlation was established between the 2 hormones at serum levels above 50 pg/ml in either normal subjects or ulcer patients. A study was also made of the variation in the blood level of these hormones under tetragastrin load. This loading test failed to reveal the behavior of secretin to an adequate extent, the hormone exhibiting no marked variation nor any definite tendency whereas the gastrin level was elevated in 15 min. in all groups. In conclusion, no significant difference existed between different groups of patients as to the fasting serum secretin level. No evidence in support of a correlation between gastrin and secretin levels was provided, nor any significant difference noted in the ratio between the two.

RADIOIMMUNOASSAY OF HUMAN PANCREATIC POLY-  
PEPTIDE AND ITS CLINICAL APPLICATION

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Human pancreatic polypeptide(hPP) has been demonstrated not only in pancreatic islet tissue but also in pancreatic exocrine and GI tract. We have established a heterologous radioimmunoassay for hPP in human plasma using anti-hPP(supplied by Chance) and following results were obtained.

(1)  $^{125}\text{I}$ -labelled PP was prepared by radioiodination of bovine PP with chloramin T method. Specific activity was 90 - 180  $\mu\text{Ci}/\mu\text{g}$ . Separation of antibody-bound  $^{125}\text{I}$ -bPP from free  $^{125}\text{I}$ -bPP was performed with double antibody method. The standard curve showed linear over the range 30 - 1,000pg/ml of hPP and the detection limit was 30pg/ml. The crossreactivities to MC-insulin, glucagon, somatostatin, secretin, VIP, GIP et al except PP was not observed.

The coefficient of variation for intraassay and interassay were 5.1 - 6.6% and 5.2 - 10.9%, respectively.

(2) Basal plasma levels of hPP after overnight fasts in 110 healthy subjects from 17 to 79 years ranged from less 30 to 711pg/ml. Mean basal plasma hPP in 26 healthy subjects of the third decade(20 - 29 years) was  $60.7 \pm 9.5$ pg/ml and increased continuously from the third to the eighth decade (70 - 79years). In diabetic patients basal plasma hPP increased with age, and particularly in the juvenile-onset type with insulin was significantly elevated compared to that of healthy age matched controls.

(3) In 10 healthy subjects the plasma hPP response after protein rich meal ingestion was biphasic pattern which showed two peaks, one at 10 min and other at 120 min, but in 18 diabetic patients hPP response was uniphasic pattern which showed the single peak at 20 - 70 min. These results may lead to increased understanding of the pathogenesis or sequelae of the diabetes mellitus.