

que. Minimal detectable quantity of this assay system was 50 pg/ml in plasma. Addition of secretin to two normal human plasma gave mean recovery rate  $88.1 \pm 11.9$  ( $\pm$ SD),  $107.2 \pm 28.5$  percent respectively. Four times of intra and inter-assay coefficient of variation of this assay system were 1.37% and 3.63% respectively. Fasting plasma secretin levels ranged mostly from 50 to 217 pg/ml in fasting healthy human subjects. Fasting levels of secretin in patients with diabetes mellitus, chro-

nic liver disease, hyperthyroidism and hypothyroidism were not significantly different from those in normal subjects. In normal and diabetic subjects, the plasma secretin levels did not change significantly after ingestin of 50 gm glucose. Furthermore, plasma secretin levels unchanged following ingestion of a meal, although plasma gastrin levels increased significantly. These results suggest this secretin RIA kit is useful to evaluate the function of S cell.

### **Evaluation of AMICON MC-40 Ultrafiltration System for the Measurement of CEA by Z-gel Method**

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Present method for the measurement of CEA by Roche kit consists of 3 steps, that is, deproteinization using perchloric acid, dialysis of samples and subsequent radioimmunoassay (RIA). The 2nd step is necessary for the removal of excess salts. It needs skilled and tedious technique and is time consuming as well, which makes the method unsuitable to be performed in clinical laboratories on routine basis. The purpose of present study is to evaluate a simpler procedure using ultrafiltration in order to replace the dialysis.

AMICON MC-40 system was used for ultrafiltration. The apparatus consists of 4 units each of which contains 10 cells mounted with CM filters. Five ml of deproteinized samples were added by hand to the cells, to which 3M tris buffer, ammonium acetate buffer are successively added automatically. The ultrafiltration is performed under agitation, which takes 2 hours. Desalted samples are pipetted to test tubes, which are subjected to subsequent RIA.

Plasma CEA measured using AMICON MC-40 ultrafiltration system was evaluated in comparison with our previously reported data obtained by Z-gel method using dialysis.

Basic evaluation of the ultrafiltration method included within assay error of 8–33% of coefficient of variance (C.V.) in the range of 0.6–10 ng/ml, between assay error of 8% (C.V.) in 8 measurements and recovery rate of 98–113% ( $\bar{m}$  107%). Plasma CEA levels in 19 patients measured by the two methods correlated well with regression equation of  $Y(\text{Dialysis}) = 0.98 \times (\text{Ultrafiltration}) - 0.25$  ( $r = 0.93$ ). Those results agree well with the data obtained previously using dialysis.

Ultrafiltration method is suitable for routine clinical measurement of CEA, as it allows to complete the measurement during a working day, the major advantage over the former method which needs overnight dialysis changing water several times.