TWO COMPONENTS IN EXOCRINE SECRETION OF THE RAT PANCREAS: BICARBONATE-DEPENDENT FLOW INDUCED BY SECRETIN AND CALCIUM-DEPENDENT FLOW INDUCED BY CHOLECYSTOKININ-PANCREOZYMIN

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1) The influences of $[Ca^{++}]_0$ and $[HCO_3^-]_0$ on the flow and amylase output of pancreatic juice after stimulation with cholecystokinin-pancreozymin (CCK-PZ) or secretin were studied in the isolated and perfused pancreas of rats.

2) The secretin evoked a dose-dependent and continuous increase in flow of the pancreatic juice, and the slight but definite increase in amylase output was also dependent on the dose of secretin.

3) The increase in flow of the pancreatic juice evoked by secretin (5 Ivy dog mU/ml) was competely stopped after the omission of $[HCO_3^-]_0$, but was only slightly suppressed by the deprivation of $[Ca^{++}]_0$.

4) The increase in flow of the pancreatic juice induced by CCK-PZ (5 Ivy dog mU/ml) was little affected by deprivation of $[HCO_3^-]_0$. On the contrary, deprivation of $[Ca^{++}]_0$ markedly inhibited the CCK-PZ-induced secretory responses.

5) It may be concluded that there are two components in the increase of flow of the pancreatic juice: one is the $[HCO_3^-]_0$-dependent flow, which is evoked by secretin, the other is the $[Ca^{++}]_0$-dependent flow associated with the increase in the enzyme output, which is evoked by CCK-PZ.