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INHIBITORY EFFECT OF PANCREATIC ENZYME EXCRETION WITH THE INTRODUCTION OF AMYLASE

Baybekova G.
Andijan State Medican Institute, Uzbekistan

ABOUT ARTICLE

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Abstract: The removal of pancreatic juice from the duodenum increases the secretion of the latter, and the reverse introduction of juice slows it down. The mechanism of this effect has been the subject of lively discussions for many years.

INTRODUCTION

The study of this issue has not only theoretical, but also practical significance, including for improving the methods of functional diagnostics and substitution enzyme therapy. So, based on the accumulated data, it can be assumed that with continuous aspiration of pancreatic juice from the duodenum by a probe, the hypersecretory reaction of the gland is manifested if the secretion is caused by the introduction of a stimulant (for example, hydrochloric acid), and is absent if it is caused by parenteral administration of secretin with pancreasimine. Most researchers associate the effect of inhibition of secretion with the action of trypsinogen or its hexapeptite fragment on the endocrine apparatus of the duodenum. At the same time, oral administration of amylase has been shown to reduce the amylolytic activity of rat pancreatic homegenate. The purpose of the study: Based on the general principle of regulation of the enzymatic activity of the digestive glands, an assumption was made about the differentiation of its inhibition depending on the fermetative activity of the duodenal contents. We conducted a study to find out the effect of increased amylolytic activity of duodenal contents on pancreatic secretion. The experiments were performed on 5 mongrel dogs weighing 12-15 kg. Anesthesia (droperidol, aminazine, hexanal) was performed under controlled Breathing (DP-8 apparatus). To collect pancreatic juice, the main pancreatic duct was cannulated, a ligature B was applied to the small duct at the site of the pyloric pulp, B of the initial duodenum was strengthened with a pouch suture to introduce a stimulator of the secretion part. Blood and urine were collected through catheters inserted into both ureters and the femoral vein. To stimulate the secretion, 8-10 ml of 0.1 n hydrochloric acid solution was administered intraduodenally for 1-4, then 8-10 ml of hydrolysin acidified to pH 2 every 15 minutes for 8 hours. After 2 hours, 0.2 mg% ratvor (10 ml / h) of the enzyme

preparation amylase (produced by the Olainen plant) was injected into the duodenum at the rate of 20 mg / h (2.5 every 15 minutes), then 2 hours of barley malt diastase hydrolysin, 1 hour amylase and another 2 hours of hydrolysin. In the collected juice, the content of bicorbonates (reverse titration), protein (according to Lowry), amylase (according to Smith-Roe modified by A.M. Ugolev), lipase (according to Titz) and total proteolytic activity (according to Kunitz) were determined. The volume of urine was taken into account, the amount of amylase was determined every hour in the urine and blood plasma. The introduction of acidified hydrolysin into the duodenum caused a fairly stable secretion from hour to hour with a high content of enzymes in the juice, slightly decreasing in volume by 6-8 hours of experience. Intraduodenal administration of malt diastase did not change the volume of secretion and excretion of bicorbonates, lipase protein and proteases in the juice. A decrease in the volume of secretion and the release of bicorbonates due to this was noted at the end of the experiment, apparently due to its duration. Consequently, the activity of even duodenal contents, a small increase in amylotic is caused by a heterogeneous (plant) enzyme, always leads to inhibition of pancreatic secretion of amylase. This allows us to conclude that the inhibition of pancreatic secretion is differentiated depending on the type of enzymatic activity increased in the duodenum.

This implies the possibility of differentiated correction of pancreatic enzyme excretion by: a) oral administration of enzyme preparations with different activity of their ingredients or preparations with the same activity (according to the results of our study, amylotic activity); b) inhibition of pancreatic amylase secretion. The question of the mechanism of such braking is complicated. It is believed that inhibition of pancreatic secretion caused by intraduodenal administration of trypsinogen is provided by inhibition of the release of cholecystokinin-pancreosimin from endocrine 1-cells of the duodenum. The excretion of amylase in urine increased during the experiment due to increased urine diuresis and amylotic activity, gradually reaching colossal values (50-70 times more than in the first 2 hours of the experiment). This could not be exogenous amylase absorbed from the intestine, since only 2,200 units were injected into the intestine during 2 infusions. amylase, and more than 10,000 units were excreted in the urine in 6 hours, not to mention the fact that the absorption of amylase in the intestine is very insignificant. It can be assumed that under conditions of increased amylolytic activity of the duodenal contents, a redistribution of the exosecreted and incretireable enzyme occurs.

However, the comparison of the amount of amylase under-excreted with juice (327232 units) as a result of the inhibitory effect of diastase on secretion and excreted in urine (10303 units) showed that about 3% of the amount of amylase by which its secretion by the gland decreased was released by the renal route, Most likely, the increase in excretion of amylase in urine is not associated with the effect of the injected diastase, and is the result of a gradual increase in the permeability of the histohematic barrier and a slightly increased deviation of amylase from the gland into the blood under conditions of stimulation of the gland by hydrolysin. The very effect of inhibition of amylase exosecretion under the action of malt diastase injected into the duodenum is realized at the level of moderate selective inhibition of amylase synthesis and extrusion by the pancreas.

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