SECRETORY RESPONSES TO OUABAIN AND TO LOW Na^+ ENVIRONMENT IN THE ISOLATED PERFUSED PANCREAS OF GUINEA PIGS

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Secretory responses to ouabain and to low Na^+ environment have been demonstrated and examined in the isolated perfused pancreas of guinea pigs. Ouabain, ranging from 10^{-6}M to 10^{-4}M, produced dose-dependent secretory responses (pancreatic juice flow and protein output). The responses to 10^{-5}M ouabain were completely abolished in Ca^{++} deficient environment. The responses to 10^{-5}M or 10^{-4}M ouabain remained almost unchanged after atropinization ($2x10^{-6}$M). Lowering external Na^+ concentration from the control (156mM) to 25mM, 50mM, or 100mM induced the secretory responses. The responses to 25mM Na^+ were nullified after the removal of external Ca^{++}. The responses were decreased to about one half after atropinization ($2x10^{-6}$M). The present results are compatible with the view that a major portion of the secretory responses to ouabain and to low Na^+ environment may be mediated by the release of acetylcholine and other transmitters from the intrinsic nerve endings distributed to the exocrine pancreas of guinea pigs.