Galanin potentiates amylase secretion by mouse pancreatic lobules but not by isolated acinar cells

M. Bazargan,[1] S.G. Barreto,[1] A.C. Schloithe,[1] C.J. Carati,[2] J. Toouli[1] and G.T.P. Saccone,[1] [1]Department of General and Digestive Surgery, and [2]Department of Anatomy and Histology, Flinders University, Bedford Park, SA 5042, Australia.

Galanin is implicated in the pathogenesis of acute pancreatitis. Many rodent models of acute pancreatitis use supramaximal concentrations of caerulein to induce the disease. The effect of galanin on amylase secretion under these conditions is unclear. We hypothesised that galanin modulates pancreatic amylase secretion evoked by a supramaximal concentration of caerulein (10^{-7}M) by a direct action on the acinar cells (AC). We compared the effect of exogenous galanin on amylase secretion from pancreatic lobule and AC preparations evoked by 10^{-7}M caerulein. Lobules and AC were prepared from mouse pancreata by standard collagenase digestion techniques. Lobules or AC (n=5-7 preparations) were incubated with galanin (10^{-13}–10^{-7}M), caerulein (10^{-12}–10^{-7}M), alone or in combinations for 60 min at 37°C. Control lobules or AC were incubated in medium alone. Amylase activity in the incubation medium was measured and expressed as % of total amylase (medium plus lobules/AC). Caerulein stimulated amylase secretion from lobules and AC in a dose-dependent manner ($P<0.05$). The peak secretion from lobules and AC was 170% and 330%, respectively, of control and evoked by 10^{-10}M caerulein in both preparations. Secretion then declined with increasing concentration in both preparations. Galanin alone did not influence basal amylase secretion from lobules and AC. Caerulein (10^{-7}M) alone stimulated amylase secretion from lobules to 124% of control, whereas co-incubation with galanin (10^{-12}M–10^{-7}M) potentiated caerulein-stimulated amylase secretion up to 160% of control ($P<0.05$). In contrast, galanin had no effect on the caerulein-stimulated amylase secretion from AC. We conclude that galanin does not act directly on AC to regulate pancreatic amylase secretion.