Compared actions of secretin (S), cholecystokinin (CK) and caerulein (C) on dog choleresis

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The aim of this study was to ascertain whether a close similarity exists in the choleretic actions of these polypeptides as one would expect from the work of Jones & Grossman (1970).

The experiments were carried out on 14 dogs anaesthetized with a phenobarbital/pentobarbital mixture. The dogs were cholecystectomized and fasted for 24 h before the acute experiment. Experiments were made with and without exogenous taurocholate support (836 (nEq/kg) min). When individually given by a 2 h i.v. infusion, the polypeptides did not show marked difference sufficient to denote substantially different capacities of affecting bile secretion, and the choleretic effect consisted of an increase in flow accompanied by an increase in HCO_3^- concentration; the latter showed some irregularity in the case of CK (20 ng kg^{-1} min^{-1}). No increase in the output of bile salts or other solid components of bile was observed. However, a significant ($P < 0.001$) increase in Na^+ and K^+ concentrations was constantly observed with S (0.05 u.c. kg^{-1} min^{-1}). In the case of C (20 ng kg^{-1} min^{-1}), stimulation of flow was regularly preceded by an inhibition during the first 20 min of infusion.

Surprisingly, the results were different when an 80 min C infusion was superimposed on a S or CK infusion started 60 min before: no early inhibition was apparent, a marked increase in flow was promptly produced, but the C effect very soon vanished although C infusion was continued. The increase in flow during the first 20 min of C infusion was constantly higher than what one would have expected if a mere summation of effects had taken place. Contrary to what was found with the infusion of individual polypeptides, the concentration of HCO_3^- decreased and, slightly but constantly, so did that of Na^+ and K^+; bile salt concentration remained constant or increased, whereas that of cholesterol and bilirubin decreased. Consequently, bile salt output increased remarkably. Combined infusions of S and CK showed a purely summative effect.

These results suggest that C, at least when combined with gastrointestinal hormones, has a mechanism of action which does not exactly overlap that of S (to which it is not structurally related), as happens at the pancreatic secretion level, or that of CK (with which it shares the C-terminal octapeptide): other sites in the biliary secretory system could be involved.

Reference

JONES, R.S. & GROSSMAN, M.I. (1970). Choleretic effect of cholecystokinin, gastrin II, and caerulein in the dog. *Am. J. Physiol.*, **219**, 1014-1018.

Effects on salivary glands of the chronic administration of eledoisin and physalaemin to rats

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Eledoisin (EL) and physalaemin (PH) are active endecapeptides of natural origin which resemble Substance P in their biological activity and chemical structure (Erspamer & Anastasi, 1962; Bertaccini, Cei & Erspamer, 1965; Erspamer, 1971).

EL and PH are the only substances so far known which are able to ameliorate and sometimes to cure salivary and lacrimal insufficiency of Sjoegren's syndrome (de Caro, Cordella & Miani, 1969; Bietti, de Caro & Capra, 1974).

It would be of interest to elucidate the mechanism of this therapeutic effect which is still completely unknown. Thus, the purpose of this paper was to check whether chronic administration of EL or PH to rats produced: (1) morphological alterations of salivary glands; (2) modified sensitivity of salivary glands to single