



Figure 1 Effect of (○) p-chloroamphetamine (5 mg/kg) and (●) 0.9% saline on rat activity measured by doppler shift radar. The initial effect of p-chloroamphetamine is to produce increased and almost continuous high and low speed movements (head turning, forepaw treading) indicated by the increased counts in a and b and reduced starts in c and d. From 90 min after injection the main effect of the drug is to increase exploratory behaviour (increased counts in a and b associated with increased starts in c and d). Results are given as the mean of 4 experiments.

An indirect effect of isoprenaline on α -amylase release by amphibian pancreas organ cultures

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Amphiuma means pancreas fragments survive in organ culture for several weeks, and Gater & Balls (1977) found that the factors affecting amylase release were similar to those which influence the mammalian acinar pancreas. However, it was not clear whether isoprenaline-stimulated amylase secretion resulted from a direct β -adrenoceptor effect on the acinar cells themselves or an indirect effect via the release of endogenous acetylcholine.

Groups of four pancreas cultures were treated with

methacholine chloride, isoprenaline hydrochloride, atropine sulphate and/or timolol maleate. The culture medium was changed each day and assayed for α -amylase content (Gater & Balls, 1977).

Methacholine stimulated amylase release, and this effect was blocked by atropine, but not by timolol (Table 1). Isoprenaline-stimulated amylase release was also reduced by atropine, but not by the β -adrenoceptor antagonist, timolol. Timolol, however, did block the glycogenolytic effect of isoprenaline on liver organ cultures from the same animal: glycogen content (% wet weight, 48 h after addition, $n = 4$) was: control, 1.5 ± 0.1 ; 10^{-5} M isoprenaline, 0.2 ± 0.05 ($P < 0.001$); isoprenaline + 10^{-4} M timolol, 1.3 ± 0.2 .

These results suggest, as in the case of cat isolated perfused pancreas (Pederson & Schulz, 1974), that the isoprenaline-induced secretion of amylase could have resulted from the release of endogenous acetylcholine (possibly from intact cholinergic nerve endings), which then stimulated the muscarinic receptors of the

Table 1 Amylase release by *A. means* pancreas organ cultures

Treatment	Total α -amylase released (μ u/mg tissue, mean \pm s.e. mean, $n = 4$)		
	0-24 h	0-48 h	0-72 h
Untreated controls	30 \pm 2	70 \pm 6	109 \pm 2
atropine (10^{-5} M)	35 \pm 2	66 \pm 5	81 \pm 7
timolol (10^{-4} M)	33 \pm 2	64 \pm 6	93 \pm 14
methacholine (10^{-5} M)	97 \pm 10 ($P < 0.001$) ^a	199 \pm 20 ($P < 0.001$) ^a	276 \pm 22 ($P < 0.001$) ^a
methacholine + atropine	20 \pm 3 ($P < 0.002$) ^b	50 \pm 4 ($P < 0.001$) ^b	82 \pm 7 ($P < 0.001$) ^b
methacholine + timolol	70 \pm 5	145 \pm 10	221 \pm 16
isoprenaline (10^{-5} M)	52 \pm 4 ($P < 0.002$) ^a	106 \pm 4 ($P < 0.002$) ^a	142 \pm 5 ($P < 0.01$) ^a
isoprenaline + atropine	30 \pm 4 ($P < 0.01$) ^b	68 \pm 9 ($P < 0.01$) ^b	83 \pm 10 ($P < 0.01$) ^b
isoprenaline + timolol	52 \pm 5	106 \pm 13	137 \pm 14

^a Significantly different from control value.^b Significantly different from value with agonist alone.

Drugs were added at 0, 24 and 48 h.

acinar cells. The mechanism involved does not appear to have involved β -adrenoceptors and may not be of physiological significance.

CHH is a Medical Research Council postgraduate research student. The timolol maleate was a gift from Merck, Sharp & Dohme Research Laboratories.

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Carotid artery loop puncture; a convenient technique for direct blood pressure measurement in the conscious dog

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Direct needle puncture of the carotid artery loop preparation provides a convenient access to the arterial circulation for blood pressure measurement (O'Brien, Chapman, Rudd & McRoberts, 1971; Meier & Long, 1971). In contrast to methods using a permanently indwelling catheter, this preparation requires no attention between use and does not compromise the long-term survival of the animal.

The loop was prepared in a similar way to that used by earlier workers (Child & Glenn, 1938; Brown & Korol, 1968; Meier & Long, 1971), but in addition we denervated the carotid sinus region.

Blood pressure is measured by inserting a teflon catheter into the artery using the Seldinger technique. A continuous infusion at 0.1 ml/min of sterile 0.9%

sodium chloride solution containing heparin 10 units/ml, is maintained during the period of measurement. Blood pressure may be recorded continuously for several hours without difficulty and with no apparent discomfort to the animal.

This technique has proved to be safe and reliable. Dogs have been used at weekly intervals for up to 12 weeks and several dogs have been used more than 40 times over a period of three years with no ill effects.

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