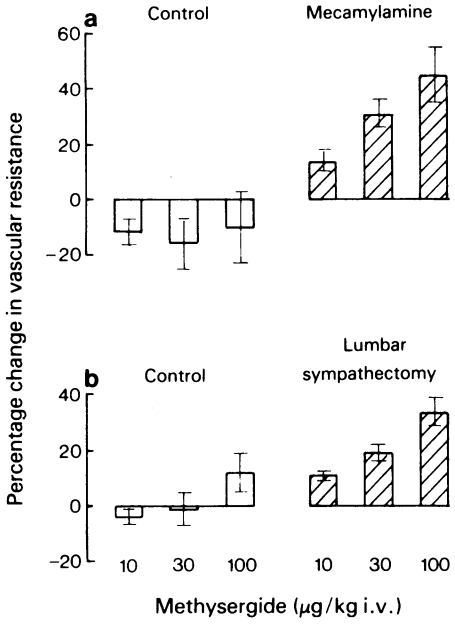

Figure 1 Left femoral arterial bed of anaesthetized dog. Effect of methysergide (10, 30, 100 μg/kg i.v.) on vascular resistance (mean aortic blood pressure ÷ mean femoral artery flow) before (control) and after (a) ganglion-blockade with mecamylamide (5 mg/kg i.v.) or (b) section of the left lumbar sympathetic chain. Values are the mean (±s.e. mean) from 6 and 5 dogs respectively. Mean control flow rate was 88 ± 9 ml/min and the mean control vascular resistance value was 1.58 ± 0.24 mm Hg. min. ml^{-1} ($n = 11$).

pretreated with atropine (0.2 mg/kg i.v.) and left femoral artery flow recorded following stimulation of the left lumbar sympathetic chain every 3 min (supramaximal voltage, 0.5 ms duration at 2 Hz for 10 s). In these experiments a muscular branch of the left femoral artery was cannulated for the local administration of noradrenaline.

Methysergide (10, 30, 100 μg/kg i.v.) produced either small increases or decreases in femoral vascular resistance. However, after mecamylamine (5 mg/kg i.v.) or section of the lumbar sympathetic chain between L_4 and L_5, methysergide produced only marked dose-dependent increases in femoral vascular resistance (Figure 1). Intravenous infusion of methysergide (10 μg kg^{-1} min^{-1}) inhibited the increases in femoral vascular resistance produced by stimulation of the lumbar sympathetic chain (70 ± 2% inhibition, mean ± s.e. mean, $n = 4$) whilst the increases in vascular resistance produced by close intra-arterially administered noradrenaline were potentiated (25 ± 15% potentiation).

Our results show that the vasomotor actions of methysergide in the dog femoral arterial bed are dependent on the degree of sympathetic activity, and suggest that the vasoconstrictor action of methysergide can be masked by a neuronal inhibitory action which may be similar to that described in the dog isolated saphenous vein (Feniuk, Humphrey & Watts, 1979).

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Are there two types of prostaglandin receptor mediating vasodilatation in the dog?

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Most prostaglandins cause vasodilatation in the anaesthetized dog (Nakano, 1972). The purpose of this study was to compare the vasodilator potencies of a range of prostaglandins in three vascular beds of the dog in an attempt to define some pharmacological characteristics of the receptors mediating this response.

Blood flow was measured, using electro magnetic flow probes, in the common carotid, femoral and superior mesenteric arteries of beagle dogs (7–11 kg) anaesthetised with barbitone sodium (300 mg/kg i.p.). Prostaglandins were administered close intra-arterially (i.a.) in random order. Up to four prostaglandins were examined in any one experiment in a maximum of two vascular beds. Prostaglandin E_1 was included in each experiment as a standard. Responses were expressed as peak percentage change in vascular resistance. All of the prostaglandins tested caused dose-dependent vasodilatation (Table 1). Prostaglandin E_1 was generally the most potent vasodilator, mean i.a. doses (95% confidence limits, number of determinations) to produce a 30% fall in vascular resistance

Table 1 Comparison of the vasodilator potencies of some prostaglandins in the anaesthetized dog

	Equipotent dose to cause 30% decrease in vascular resistance		
Prostaglandin	*Common carotid vascular bed*	*Femoral vascular bed*	*Mesenteric vascular bed*
E_1	1	1	1
E_2	1.3	0.7	1.2
	(0.6–2.9)	(0.3–1.3)	(1.1–1.3)
11deoxy E_0	9.4	8.9	3.6
	(3.4–26)	(5.3–15)	(1.4–9.1)
A_1	16	8.9	5.5
	(7.4–36)	(2.7–30)	(3.6–8.5)
A_2	20	21	15
	(6.0–64)	(4.5–101)	(5.5–41)
I_2	52	74	1.1*
	(36–76)	(50–110)	(0.7–1.6)
B_1	276	266	113
	(145–521)	(79–896)	(63–203)
B_2	357	287	165
	(128–997)	(78–1059)	(62–444)

Each value is the mean of 4–10 determinations (95% confidence limits).
* Significantly different from corresponding value obtained in femoral and carotid vascular beds at $P = 0.01$.

being 0.7 (0.5–0.9, $n = 24$), 0.3 (0.2–0.4, $n = 20$) and 1.0 (0.8–1.3, $n = 8$) ng/kg on the common carotid, femoral and superior mesenteric arterial beds respectively. With the exception of PGI_2, the order of agonist potency on all three vascular beds (PGE > deoxy E_0 = A > B; 1- and 2-series equipotent) is very similar to that previously described on cat isolated trachea (Apperley, Coleman, Kennedy & Levy, 1979). The same receptor may therefore mediate relaxation of the trachea and vasodilatation in dog. PGI_2 was 50–70 times less active than PGE_1 on the carotid and femoral beds and on the trachea. However, PGI_2 and PGE_1 were equipotent on the mesenteric bed. The mesenteric bed may therefore contain an additional PGI_2-sensitive receptor which also mediates vasodilatation.

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Cardiovascular effects of α-adrenoceptor antagonists in the conscious rabbit

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α-Adrenoceptors, like β-adrenoceptors, have been divided on the basis of agonist and antagonist potencies into two categories: α_1 or classical postsynaptic receptors and α_2, which appear to be presynaptically located, at least in some peripheral tissues and inhibit neurotransmitter release from sympathetic nerve terminals (Berthelsen & Pettinger, 1977).

We examined three α-adrenoceptor antagonists, prazosin, phentolamine and yohimbine, which have differing affinities for α_1- and α_2-receptors (Drew, 1976; Doxey, Smith & Walker, 1977). All drugs were administered intravenously to conscious male New Zealand white rabbits. Blood pressure (MAP) and heart rate (HR) were measured directly from a catheter in the central artery of the ear and arterial plasma noradrenaline (NA) assayed radiometrically.

Twenty minutes after administration of prazosin (0.1 mg/kg) MAP was significantly lower while plasma NA was unchanged. Administration of phen-