(29.3–75.5)%, S.R. 70.9 (50.6–99.4)%, A.F. 64.3 (43.1–95.9)%, dp/dt max. 57.9 (51.3–65.4)%, C.F. 37.2 (22.1–62.4)%, and C.O. 76.9 (51.3–115.3)%.

2-Pyridylethylamine between 10^{-8} and 10^{-6} mol had little effect on sinus rate, increased coronary flow and produced decreases in all other parameters. Doses in excess of 10^{-6} mol and up to 10^{-4} mol elicited increases in all parameters. The maximum increase in each parameter was consistently less than that produced by histamine. For the increases, the potency of 2-pyridylethylamine relative to histamine (100%) on all parameters, was about 0.2%. This could indicate histamine H_2-receptor stimulation, as 2-pyridylethylamine has been shown to have about 0.2% the activity of histamine on a histamine H_2-receptor system (Durant *et al.*, 1975).

The results indicate the importance of histamine H_2-receptors in the mediation of the changes in cardiac function produced by histamine in this preparation. The involvement of histamine H_1-receptors is less clear from this study although the data suggests that they may mediate a selective cardiac depression.

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The effects of four general anaesthetic agents on the regional distribution of cardiac output in the rat

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The use of radioactive microspheres for the measurement of the distribution of cardiac output (CO) is now an established technique (Rudolph & Heymann, 1967; Mendell & Hollenberg, 1971; McDevitt & Nies, 1976). We have used this technique to compare the cardiovascular effects of four general anaesthetics, sodium pentobarbitone (Sagatal, May & Baker), ethyl carbamate (BDH), alphaxalone/alphadolone acetate (Saffan, Glaxo) and ketamine (Ketalar, Parke-Davis) given intraperitoneally.

Carbonized microspheres (15 μ; 3M Co., St Paul, Minnesota) labelled with ^{85}Sr were injected into the left ventricle of male rats (250–400 g) via a cannula passed down the right carotid artery. Cardiac output and its distribution were determined by the technique of McDevitt & Nies (1976). The results for each anaesthetic are shown in Table 1.

There was no significant difference in the mean cardiac output and arterial blood pressure with the four anaesthetics. Ethyl carbamate produces the most strikingly different distribution of cardiac output when compared to the other three anaesthetics. It produces significant ($P < 0.05$) reductions in flow to the kidneys, spleen, gastro-intestinal tract and in the total hepatosplanchnic flow. Ethyl carbamate also showed a significant increase ($P < 0.05$) in flow to muscle when compared with pentobarbitone and alphaxalone/alphadolone.

Ketamine when compared to the other three anaesthetics produced an increase in flow to the brain. In seven of the animals anaesthetized with ketamine, blood flow to the cerebellum and brain stem, and to each cerebral hemisphere was determined separately. Blood flow to the cerebellum and brain stem was 1.17 ± 0.05 (7), left hemisphere 1.74 ± 0.17 (7) and right hemisphere 1.55 ± 0.13 (7) ml min^{-1} g^{-1}. Thus ligation of the right carotid artery, an integral part of the technique does not significantly reduce flow to the right hemisphere.

Our results indicate that only ethyl carbamate produces a greatly different pattern of distribution of cardiac output compared to the other anaesthetics studied. This may be a consequence of hypersecretion of adrenaline produced by this anaesthetic (Spriggs & Stockham, 1964).

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Table 1 Comparison of the effects of general anaesthetics on blood pressure, cardiac output and its distribution

	Sodium pentobarbitone (50 mg/kg)	*Ethyl carbamate (1.4 g/kg)*	*Alphaxalone/ alphadolone (96 mg/kg)*	*Ketamine (120 mg/kg)*
Mean arterial pressure (mmHg)	117.2 ± 4.22 (10)	113.0 ± 8.63 (10)	116.3 ± 3.63(8)	118.6 ± 3.6 (12)
Cardiac output (ml/min)	72.0 ± 7.1 (11)	70.5 ± 7.4 (10)	70.3 ± 8.4 (9)	72.0 ± 5.4 (12)
Cardiac output (ml min^{-1} kg^{-1})	223.2 ±24.5 (11)	240.0 ±25.9 (12)	253.3 ±35.4 (9)	202.5 ±16.9 (12)
% Cardiac output				
Heart	10.0 ± 1.9 (11)	9.6 ± 1.3 (12)	9.1 ± 1.5 (8)	7.0 ± 0.9 (12)
Lungs	3.9 ± 1.1 (11)	7.7 ± 1.7 (12)	2.9 ± 0.5 (9)	4.1 ± 0.7 (12)
Liver*	4.1 ± 0.7 (11)	2.8 ± 0.4 (12)	2.6 ± 0.3 (9)	2.7 ± 0.5 (12)
Spleen	1.3 ± 0.2 (11)	0.4 ± 0.1 (12)	1.3 ± 0.2 (9)	1.1 ± 0.3 (12)
Kidneys	15.4 ± 1.5 (11)	8.0 ± 1.2 (12)	14.8 ± 1.6 (9)	19.0 ± 1.5 (12)
Epididymides	0.23± 0.09 (5)	0.15 ± 0.02 (6)	0.21± 0.02(6)	0.20 ± 0.01 (11)
Testes	1.1 ± 0.2 (5)	1.3 ± 0.2 (6)	1.3 ± 0.1 (6)	1.0 ± 0.1 (11)
Brain	2.1 ± 0.2 (7)	2.4 ± 0.4 (7)	2.3 ± 0.2 (9)	3.9 ± 0.4 (12)
Gastrointestinal tract	19.2 ± 1.5 (11)	11.8 ± 1.2 (12)	17.4 ± 1.7 (8)	17.1 ± 1.5 (12)
Hepatosplanchnic**	24.5 ± 1.4 (11)	15.0 ± 1.3 (12)	21.1 ± 1.8 (8)	20.1 ± 1.9 (12)
ml min^{-1} g^{-1}				
Skin	0.07± 0.012(11)	0.053± 0.014(11)	0.11± 0.22(9)	0.078± 0.009(12)
Skeletal muscle (fore limb)	0.12± 0.031(11)	0.33 ± 0.047(12)	0.21± 0.03(9)	0.23 ± 0.03 (12)

* Hepatic artery.
** Hepatic artery, spleen and gastro-intestinal tract.
All values are given as mean ± s.e. mean with the number of determinations in parentheses.