Summary. (1) Sixteen serial oxygen consumption studies were conducted in a group of 7 adult humans who received one or more of 6 types of intravenous preparations.

(2) Maximal increases in oxygen consumption above the initial pre-infusion levels attained their greatest values in recipients of the 10% combined fat emulsion when compared with a variety of intravenous preparations of a lesser caloric or energy value.

(3) With fat as the prime contributing factor to the increased energy value of the 10% combined fat emulsion, it is justifiable to conclude that the intravenously infused fat is utilized for energy production when in part it undergoes oxidative combustions which are ultimately measured in terms of oxygen consumed.

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17098. Effect of Dibenamine on Blood Flow and Cardiac Output in the Dog.

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Since N, N-dibenzyl-β-chloroethylamine (Dibenamine) was first introduced as an adrenergic blocking agent, many reports have been made on various aspects of its pharmacological properties.[1] Evidence has been presented indicating that Dibenamine produces vasodilation as evidenced by an increase in skin temperature,[2] and in dogs subjected to hemorrhage or trauma those pretreated with Dibenamine showed a slightly higher total blood flow than the controls.[3] It also has been reported that Dibenamine has no significant effect on cardiac output,[1] or increases cardiac output,[4] although no data are given on this point. In this report data are presented on the effects of Dibenamine on blood flow and cardiac output.

Methods. With but one exception the dogs were anesthetized with barbital sodium 300 mg/kg, chloralose, 250 mg/kg, was used in one dog. Blood pressure was obtained from a carotid artery with a Hamilton manometer and cardiac output determined from the pressure pulse by the method of Hamilton and Remington.[5] Blood flow was recorded from either a carotid or a femoral artery by means of a rotometer.[6] The anticoagulant used was chlorazol fast pink, 2 cc of an 8% solution per kg. The dose of Dibenamine, 20 mg/kg, when given intravenously (i.v.), was administered slowly over a 5-minute period. In a majority of the dogs the degree of adrenolytic action was tested with epinephrine 30 minutes after the Dibenamine injection. In all cases only a depressor response was elicited.

Results. Table I summarizes the data on those dogs in which cardiac output, blood pressure and blood flow were determined; pressure and flow were measured in 16 additional dogs. In all of the 24 dogs but 7 the blood pressure dropped significantly, 3 of these showed a rise in pressure and in the other 4 the changes were less than 10 mm Hg. The drop in pressure occurred about 20 minutes after Dibenamine was given. Little effect was noted on heart rate with a slight

[1] Nickerson, M., and Goodman, L. S., *J. Pharm. Exp. Therap.*, 1947, **89**, 167; *Fed. Proc.*, 1948, **7**, 397.

[2] Hecht, H. H., and Anderson, R. B., *Am. J. Med.*, 1947, **3**, 3; Vleeschhouwer, G. R., PROC. SOC. EXP. BIOL. AND MED., 1947, **66**, 151.

[3] Remington, J. W., Wheeler, N. C., Boyd, G. H., and Caddell, H. M., PROC. SOC. EXP. BIOL. AND MED., 1948, **69**, 150.

[4] Wiggers, H. C., Ingraham, R. C., Roemhild, F., and Goldberg, H., *Am. J. Physiol.*, 1948, **153**, 511.

[5] Hamilton, W. F., and Remington, J. W., *Am. J. Physiol.*, 1947, **148**, 14.

[6] Gregg, P. E., Shipley, R. E., Eckstein, R. W., Rotta, A., and Wearn, J. T., PROC. SOC. EXP. BIOL. AND MED., 1942, **49**, 267.

TABLE I.
Effects of Dibenamine on Blood Pressure, Cardiac Output and Peripheral Blood Flow.

	Blood pressure			Cardiac output, liters/M²			Blood flow, cc/min.		
		After Dibenamine			After Dibenamine			After Dibenamine	
Dog	Control	30 min.	60 min.	Control	30 min.	60 min.	Control	30 min.	60 min.
DF 13	207/175	155/105	135/60	2.5	3.0	4.8	82	45	41
3	150/128	93/75	91/25	1.5	1.45	1.7	4	8	4
14	190/135	198/112	202/140	3.4	4.0	3.8	60	116	135
15	295/242	102/57	Died	6.0	4.7	Died	148	16	Died
16	190/157	95/77	95/70	1.4	1.3	1.3	82	32	12
17	185/162	130/115	122/107	1.2	1.0	1.0	39	36	41
18	205/180	155/130	152/110	1.9	0.9	2	55	28	30
19	220/187	150/87	145/77	1.8	3.9	3.4	48	39	36

increase being the most frequent response. The blood flow during the experimental period, dropped in 16, remained the same in 6 and increased in 2 dogs one of which had a blood pressure rise of 12 mm Hg and the other a fall of 10 mm Hg. The flow in the other 2 dogs, whose pressure was increased, remained constant in one and dropped 30% in the other. The cardiac output dropped in one case only (DF 15), there was an increase in 2 (DF 13, DF 18), and the others did not change significantly.

Dibenamine was administered intra-arterially in 2 to 4 mg/kg amounts in 3 dogs. There was no evidence of any peripheral action.

In 2 dogs epinephrine, 0.01 mg/kg was given at the end of the 30 minutes period, the cardiac output approximately doubled returning to the control level in from 2 to 3 minutes, the heart rate increased between 10 and 15% and the systolic and diastolic pressure fell.

No detectable difference in response was noted in the dog receiving chloralose.

Discussion. Dibenamine in adrenolytic doses produces a significant drop in blood flow to the head or leg, but has little effect on cardiac output of the dog. The drop in blood pressure and the change in the pressure pulse are probably the result of a vasodilation in the splanchnic area which does not include the kidney.[7]

Summary. Following Dibenamine, cardiac output remained essentially unaltered in 5 of 8 dogs, peripheral blood flow decreased significantly in 16 of 24 dogs.

[7] Wang, C., and Nickerson, M., PROC. SOC. EXP. BIOL. AND MED., 1949, **70**, 92.

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17099. Effect of an Antagonist of Pteroylglutamic Acid on the Leukemia of Ak Mice.*

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In a previous paper[1] hematologic and histologic findings in mice with an induced deficiency of pteroylglutamic acid (PGA) were described, together with a method for producing the deficiency with the aid of a crude chemical antagonist of PGA (so-called "x-methyl PGA," presumably a mixture of 7-methyl- and 9-methyl PGA).†

Following this study we became interested

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[1] Weir, D. R., Heinle, R. W., and Welch, A. D., PROC. SOC. EXP. BIOL. AND MED., 1948, **69**, 211.