

Effect of Paredrine on Blood Specific Gravity and Blood Volume.

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From the preceding report it was demonstrated that paredrine (parahydroxyphenylisopropylamine) has a more intense pressor action in human subjects than paredrinol (parahydroxyphenylisopropylmethylamine), a sympathomimetic compound which has been recommended in the treatment of shock.¹

In most forms of shock there is a definite hemoconcentration and a reduction in blood volume. The hemoconcentration is demonstrable by a rise in the specific gravity of the blood.² Prolonged stimulation of the sympathetic nervous system has been reported to result in a diminution in blood volume and in a condition resembling shock.³ It seemed important, therefore, before applying a sympathomimetic drug in the treatment of shock to determine the influence of the drug on blood concentration and blood volume.

I. *Specific gravity of the whole blood.* In the present studies, the specific gravity of the blood was determined by the falling drop method of Barbour and Hamilton.⁴ The specific gravity was measured before the administration of the drug and at the height of the pressor effect following the subcutaneous administration of 20 mg of paredrine hydrobromide in 5 subjects. Table I summarizes the results of these experiments. In 4 instances there was a slight rise in the specific gravity of the blood after the administration of the drug. The variations noted do not, however, indicate any significant degree of hemoconcentration.

II. *The effect on blood volume.* The "Evans Blue" dye was employed in determin-

ing the blood volume following the method described by Gibson and Evans.⁵ The dye concentration in the serum was estimated with a photo-electric cell colorimeter. Paredrine hydrobromide was administered in three subjects in large doses so that a marked and prolonged pressor effect was obtained. The drug was administered subcutaneously in doses of

TABLE I.
Blood Pressure Readings and Specific Gravity Determinations Following the Subcutaneous Administration of 20 mg of Paredrine Hydrobromide. The readings were made at 15, 30, and 60-minute periods.

	Control	15'	30'	60'
Blood pressure	148/94	200/96	212/98	168/96
Specific gravity	1.0564		1.0569	
B.P.	128/40	160/56	188/70	148/40
Sp.Gr.	1.0492		1.0493	
B.P.	105/70	166/92	170/98	114/75
Sp.Gr.	1.0526		1.0532	
B.P.	132/72	205/96	188/92	146/76
Sp.Gr.	1.0581		1.0581	
B.P.	115/85	172/100	182/100	144/90
Sp.Gr.	1.0513		1.0520	

30 mg in 2 subjects; in 40 mg doses in one instance. In each case 3 control readings of the dye concentration of the plasma was made during the hour preceding the administration of the drug, to estimate the normal curve of disappearance of dye from the blood. Readings were again made 10 min after the administration of the paredrine, at the height of the pressor effect, usually between 20 and 25 minutes, and at the completion of the pressor effect which varied from 90 to 165 min after the drug was administered.

Table II shows the blood pressure and blood volume before and after the administration of the paredrine. There was no sig-

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³ Freeman, N. E., *Am. J. Physiol.*, 1933, **103**, 185.

⁴ Barbour, H. G., and Hamilton, W. F., *J. A. M. A.*, 1927, **88**, 91.

⁵ Gibson, J. G., 2d, and Evans, W. A., *J. Clin. Invest.*, 1937, **16**, 301.

TABLE II.
Blood Pressure Readings and Blood Volume Determinations Following the Subcutaneous Administration of Paredrine Hydrobromide. Patients B.C. and J.M. received 30 mg and H.C. received 40 mg.

		Before drug at		After the drug at		
		30 min	15 min	15 min	30 min	90 min
B.C.	Blood pressure	118/80	122/80	164/88	172/100	110/74
	Total blood volume, cc	5000	5000	4975	5000	5041
J.M.	Blood pressure	120/70	120/70	168/86	194/112	130/72
	Total blood volume, cc	5855	5840	5770	5855	5870
H.C.	Blood pressure	118/72	120/70	210/110	208/110	150/80
	Total blood volume, cc	5206	5200	Specimen clotted	5265	5200

Paredrine subcutaneously.

nificant deviation in the blood volume. There was also no significant change in the hematocrit readings following the administration of the drug.

Conclusion. The administration of pare-

drine in doses sufficient to produce a definite and prolonged rise in blood pressure has no influence on the specific gravity of the blood and blood volume in normal individuals.

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Relative Ineffectiveness of Arsenocholine as a Methylating Agent in the Chick.

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Arsenocholine is an effective substitute for choline as a growth-promoting and antiperotic factor for the turkey and the chick.¹ In the rat, arsenocholine may assume several of the functions of choline, such as a lipotropic activity, but fails to exhibit appreciable methylating ability. The literature on the metabolism of arsenocholine in the rat has been concisely reviewed.² In seeking further explanation of the mechanism of growth-promoting and antiperotic effects of arsenocholine in the fowl it seemed of interest to determine whether this analogue of choline could exhibit a methylating action in such species. Since

it was known that choline is capable of methylating homocysteine in the chick,³ studies were made of the comparative activity of arsenocholine in this respect.

White Leghorn chicks were placed at hatching time on a low-choline diet⁴ and maintained on this diet for 14 days in order to deplete them of choline. At 10 days of age they were carefully selected for uniform weight and vigor and divided into groups of 4 each. The individual growth rates were measured for 4 more days. All groups maintained uniform and comparable rates of growth during the latter period. They were then given the experimental diets for 8 days. A few chicks not selected for the experimental groups were kept on the low-choline diet.

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⁴ Jukes, T. H., *J. Nutrition*, 1941, **22**, 315.