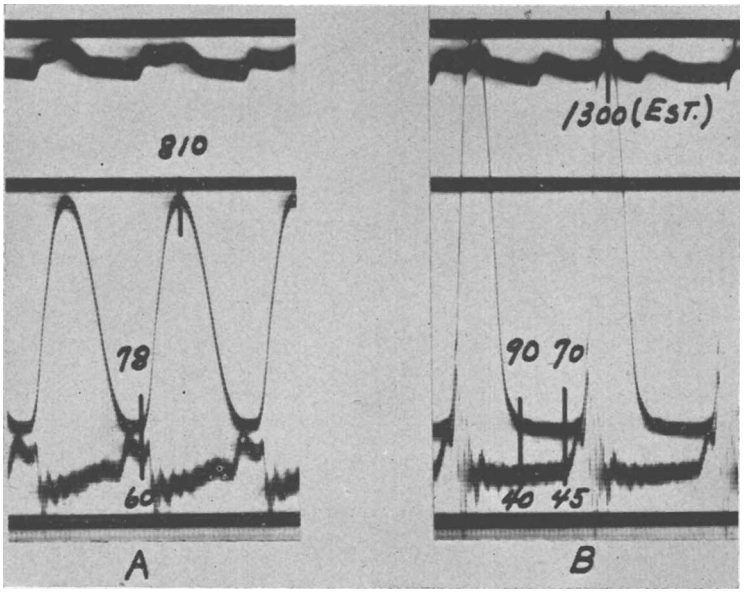

FIG. 3. Right ventricular curves (middle) and right atrial curves (lower) recorded from the isolated heart before (segment A), and after (segment B) an exceedingly small dose of epinephrine. (The top curve is perfusion pressure.) Discussed in text.

levels) without deterioration of the pressure pulses.

Failure of the preparation, when it occurs, is the result of an unexplained default of the donor dog. Preliminary findings indicate that the condition resembles that of irreversible hemorrhagic shock, but the condition is not accounted for on the basis of external blood loss.

Received May 8, 1951. P.S.E.B.M., 1951, v77.

Spectrophotometric Determination of Tromexan in Plasma and Serum.* (18892)

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The ethyl ester of bis 3,3′ (4-hydroxy coumarinyl) acetate, Tromexan, is available for therapeutic use as an anticoagulant. It is presumed to compete with vit. K in hepatic synthesis of prothrombin. The anticoagulant activity is gauged by the decrement in plasma prothrombin.

The absorption, distribution, destruction, and excretion of Tromexan were studied in part by Pulver and von Kaulla(1). These authors used an indirect colorimetric method of analysis. It is the purpose of this paper to present an accurate and rapid method for the determination of Tromexan levels.

The test. Tromexan is extracted by 2,2, 4-trimethylpentane from plasma or serum which has been acidified with hydrochloric acid. The optical density of the resultant solution of Tromexan is determined at a wave length of 310 mμ in a Beckman spectrophotometer. *Reagents.* (1) Concentrated hydrochloric acid (C.P.). (2) 2,2,4-trimethylpen-

* This work was supported by a grant from Geigy Co.

1. Pulver, R., and von Kaulla, K. N., *Schweiz. med. Wchnschr.*, 1948, v78, 956.

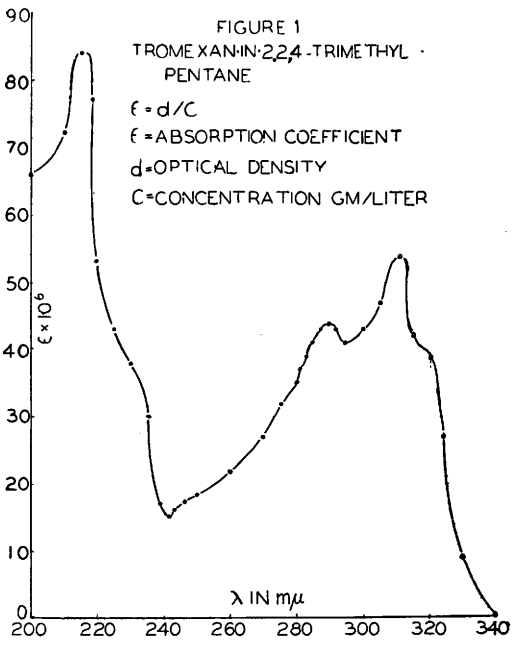
TABLE I. Tromexan Recovered from One Cubic Centimeter of Plasma.

mg Tromexan added	mg Tromexan recovered	% recovered
.01	.0095	95
.01	.009	90
.01	.010	100
.02	.018	90
.02	.020	100
.02	.020	100
.04	.038	95
.04	.037	92.5
.04	.039	97.5
.06	.057	95
.06	.060	100
.06	.058	96.7
.08	.078	97.5
.08	.084	105
.08	.078	97.5
.10	.089	89
.10	.097	97
.10	.102	102
.15	.143	95.5
.15	.143	95.5
.15	.148	98.7
.20	.196	98
.20	.190	95
.20	.200	100
.25	.253	101.2
.25	.240	96
.25	.247	98.8
.30	.296	98.7
.30	.298	99.3
.30	.298	99.3
	Avg recovery—97.2% S.D. ± 3.5%	

tane. *Apparatus.* (1) 30 cc glass stoppered bottles. (2) Shaker. (3) Beckman photoelectric quartz spectrophotometer with ultraviolet accessories and matched quartz cuvettes with 1 cm light path length.

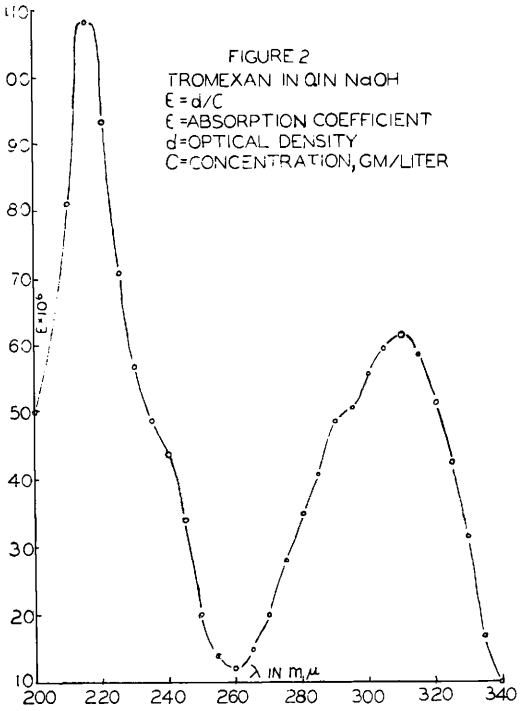
Procedure. One ml of plasma or serum is placed in the glass stoppered bottle. Five ml of 2,2,4-trimethylpentane and 0.1 ml of concentrated HCl (C.P.) are added. For quantities greater than 0.2 mg of Tromexan per ml of plasma, 10 ml of the organic solvent should be used. The mixture is shaken for 30 minutes. (In our experiments emulsions were rarely formed. When they occurred these emulsions were broken by centrifugation for 10 minutes at approximately 1000 r.p.m.). The supernatant is decanted into a quartz cuvette of 1 cm light path length. The optical density is determined at a wave length of 310 mμ. One ml of water (control plasma or serum is preferable) is treated similarly for use as a blank.

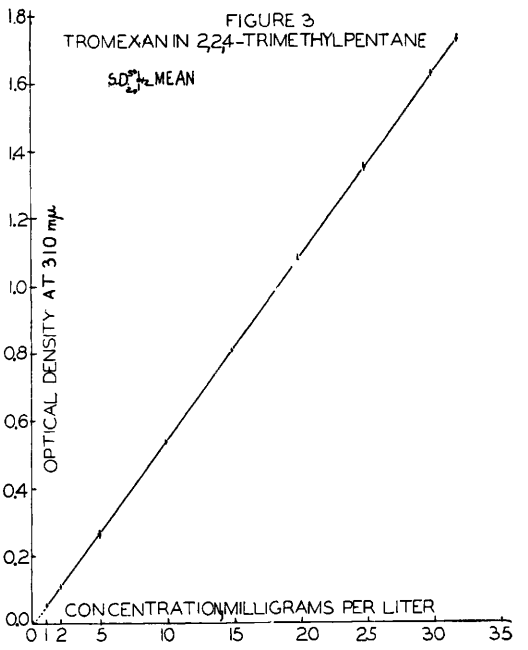
Standardization and accuracy of the procedure. Ten mg of Tromexan were dissolved in 100 ml of 2,2,4-trimethylpentane. Amounts of this solution corresponding to 0.005 to 0.2 mg were placed into 30 ml glass stoppered bottles. The solvent was evaporated at room temperature by suction. To each bottle 1 ml of plasma (or serum) was added. The procedure outlined above was then followed. Table I presents the known Tromexan content and the Tromexan content as measured by this method. Over the range studied, an average of 97.2% of the Tromexan was recovered. The standard deviation in these experiments was ±3.5%. The ultraviolet absorption spectra of Tromexan in 2,2,4-trimethylpentane and in 0.1 N NaOH are shown in Fig. 1 and 2. The peak at 310 mμ was chosen for quantitative measurements since materials extracted from normal plasma of humans or dogs do not interfere with the quantitation at this wave length. Standards prepared in accordance with the procedure described show that solutions of Tromexan in 2,2,4-trimethylpentane vary in optical density in accordance with Beer's law (Fig. 3). The dog's plasma used throughout these experiments was obtained by adding 1 cc of



3.2% sodium citrate solution to every 9 cc of whole blood. Tromexan content determinations may be made with equal accuracy on plasma or serum using the test described above.

Conclusions. (1) Tromexan in amounts of .005 to .2 mg partitions from 1 ml of acidified plasma into 5 ml of 2,2,4-trimethylpentane to the extent of 97.2 ± 3.5%. (2) The optical density of such solutions varies in accordance with Beer's law. (3) On this basis a procedure for estimating plasma and serum concentrations of Tromexan by ultraviolet spectrophotometry was evolved.





Received June 1, 1951. P.S.E.B.M., 1951, v77.

Effect of Lactate on Renal Tubular Transfer of p-Aminohippurate in Man. (18893)

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The presence of sufficient quantities of acetate, pyruvate, or lactate in the ambient fluid of the renal tubule is associated with an increased uptake of p-aminohippurate by the tubular cells *in vitro* and an increased Tm_{PAH} in dogs(1,2). The present study was undertaken to determine the effect of parenterally administered lactate on Tm_{PAH} in human subjects.

Method. The effect of intravenous administration of lactate on Tm_{PAH} was determined for 8 male subjects free of demonstrable renal

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1. Cross, R. J., and Taggart, J. V., *Am. J. Physiol.*, 1950, v161, 181.

2. Mudge, G. H., and Taggart, J. V., *Am. J. Physiol.*, 1950, v161, 191.