

(PAH) in man although the TmPAH in the dog is not influenced by mersalyl.³ The following data concerns the measurement of glucose and PAH Tm's in normal dogs and during the period of maximal diuresis by mercurial diuretics and theophylline.

Methods. Trained, unanesthetized, female dogs weighing 14-17 kg were used. Glomerular filtration rate (GF) was measured by creatinine. Glucose and p-aminohippurate Tm's were measured in independent experiments because of the reported mutual interference in the tubular transfer of these substances.^{4,5}

Creatinine was determined by the method of Folin and Wu,⁶ p-aminohippurate by the method of Bratton and Marshall⁷ and glucose by Hanes' modification of Hagedorn and Jensen's method.⁸ The dose of meralluride (Mer-

cuhydrin) and mersalyl, the two mercurials used, was 0.1 cc per kg (4 mg per kg of combined mercury) and 10-20 mg per kg of theophylline was employed.

Results. The results recorded in Tables I and II show that neither theophylline nor the mercurial diuretics studied interfere with the renal tubular transfer mechanisms for glucose or p-aminohippurate. These results indicate that the energy yielding mechanism concerned with the reabsorption of water and sodium chloride in the dog is distinct from the mechanisms concerned in the transfer of glucose and PAH. During this investigation it was observed that it is possible to reduce the TmG and TmPAH indirectly by diuretics.¹ This effect is due to dehydration and may be produced by the saline diuretics as well as the mercurial and xanthine groups, if sufficient urine output is produced to cause dehydration.

Summary. Mercuhhydrin, salyrgan and theophylline, in diuretic doses, do not interfere with the renal tubular transfer of glucose or p-aminohippurate in the dog.

Received April 22, 1949. P.S.E.B.M., 1949, 71.

⁴ Klopp, C., Young, N. F., and Taylor, H. D., *J. Clin. Invest.*, 1945, **24**, 117.

⁵ Houck, C. R., *PROC. SOC. EXP. BIOL. AND MED.*, 1946, **63**, 398.

⁶ Folin, O., and Wu, H. J., *J. Biol. Chem.*, 1919, **38**, 81.

⁷ Bratton, A. C., and Marshall, E. K., *J. Biol. Chem.*, 1939, **128**, 537.

⁸ Hanes, C. S., *Biochem. J.*, 1929, **23**, 99.

17128. Absorption of Manganese by the Thyroid Gland of the Guinea Pig.

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Ray and Deysach¹ found that subcutaneous injection of manganese chloride into guinea pigs resulted in the accumulation of manganese in varying amounts in all organs tested, but that the accumulation was especially great in the thyroid gland where deposition was in direct proportion to the dose administered. Injections of large doses of the salt depressed the oxygen consumption of the animal and small doses augmented it. Noticeable effects within a few minutes after administration suggested early absorption by the thy-

roid gland. The purposes of the present study were to find the exact time interval for the appearance of manganese in the thyroid following its subcutaneous injection, to determine the rate at which it is deposited in this organ during a 24 hour period, and finally to obtain information on its rate of elimination.

Experimental. Each of 27 guinea pigs was given one subcutaneous injection of 10.0 mg of manganese chloride per kg of body weight. The animals were sacrificed 3 at a time, at intervals ranging from 15 minutes to 4 days following the injection, and the manganese

¹ Ray, T. W., and Deysach, L. J., *PROC. SOC. EXP. BIOL. AND MED.*, 1942, **51**, 228.

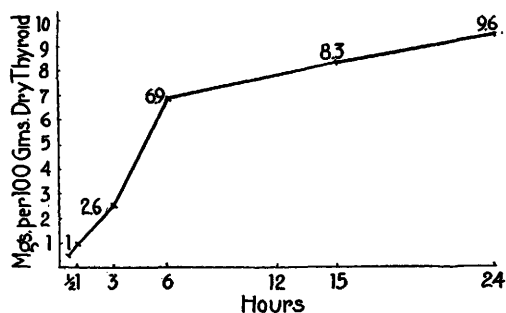


FIG. 1.

Manganese deposition in the thyroid gland of the guinea pig following a single subcutaneous injection of manganese chloride in a dosage of 10.0 mg per kg of body weight.

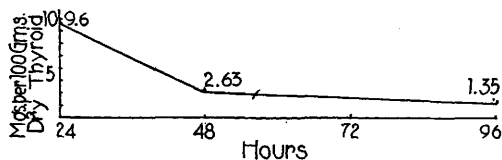


FIG. 2.

Rate of elimination of manganese from the thyroid gland of the guinea pig.

content of the thyroid gland was determined by the procedure of Ray.² The results are recorded graphically in Fig. 1 and 2. Each point on the graphs represents the average amount of manganese found in the thyroids of 3 animals. A detectable increase over the

level found in earlier tests¹ was noted in 30 minutes, and a measurable increment was found in one hour. Fig. 1 shows further that the accumulation of manganese was rapid during the early stages of absorption. Of the total amount deposited in a 24 hour period, about 70% of it accumulated within the first 6 hours. Fig. 2 shows that the elimination of manganese from the thyroid, once it began, was very rapid. More than 70% of the 24 hour accumulation disappeared within 48 hours after the injection, and 85% of it disappeared within 96 hours.

Summary. Subcutaneous injection of manganese chloride into the guinea pig caused manganese to accumulate in all organs of the body tested, but the deposition was especially great in the thyroid gland where it began to appear within 30 minutes after administration. Absorption was particularly rapid during the first few hours, but the element continued to accumulate for at least 24 hours. Of the total amount of manganese deposited in the thyroid gland about 70% accumulated during the first 6 hours. Elimination of manganese from the thyroid, once it began, was rapid. Seventy per cent of the 24 hour accumulation disappeared within 48 hours after the injection; 85% of it vanished in 96 hours.

Received April 12, 1949. P.S.E.B.M., 1949, 71.

² Ray, T. W., *J. Biol. Chem.*, 1940, **134**, 677.

17129. Effect of the D- and L-isomers of Isoamidone* on the Permeability of Dog Erythrocytes.†

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We have previously reported that changes in the permeability of erythrocytes *in vitro* appeared to be correlated with changes in the activity of the acetylcholine-cholinesterase system in the red cell.^{1,2} This conclusion was

based on the observation that physostigmine as well as methadon,[§] both of which are chol-

* 1-dimethylamino-2-methyl-3,3-diphenyl hexanone-4.

† Funds for carrying out this work were kindly supplied by the Mallinckrodt Chemical Works.

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¹ Greig, M. E., and Holland, W. C., submitted for publication to *Arch. Biochem.*

² Greig, M. E., and Holland, W. C., *Fed. Proc.*, 1949, **8**, 297.

§ Methadon, amidone, 2-dimethylamino-4,4-diphenyl-heptanone 5. The methadon and isoamidone were kindly supplied by the Mallinckrodt Chemical Works.