

for liver and 20.3% for kidney), but decreases it in a concentration higher than 1-5,000,000.

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Blood Sugar Changes After 1-2-4 Dinitrophenol.

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It has been shown by a number of workers that 1-2-4 dinitrophenol induces a moderate but persistent hyperglycemia in animals.^{1, 2, 3} A marked depletion of liver and muscle glycogen has also been reported.¹ The present experiments were done with the hope of obtaining further information on the effect of dinitrophenol on the blood sugar level.

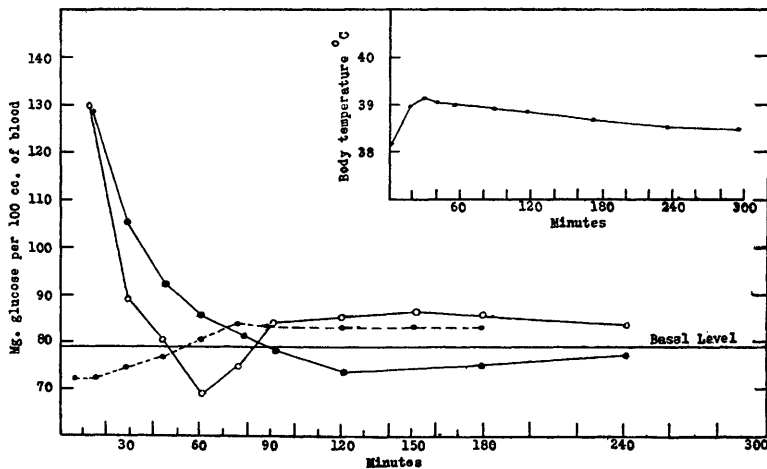


FIG. 1.

Rate of Glucose Removal from the Blood Following Intravenous Injection.

o—o Rate of glucose removal from the blood when glucose was injected 30 minutes following DNP injection. ●—● Control rate of glucose removal from the blood. ●---● Change in blood sugar following DNP injection (fasting condition).

¹ Hall, V. E., Field, J., 2nd, Sahyun, M., Cutting, W. C., and Tainter, M. L., *Am. J. Physiol.*, 1933, **106**, 432.

² Magne, H. Mayer A. and Plantefol, L., *Ann. Physiol. Physicochem. Biol.*, 1932, **8**, 1.

³ Hall, V. E., Brown, C. A., and Sahyun, M., *Proc. Soc. Exp. Biol. and Med.*, 1933, **31**, 380.

Two dogs were given subcutaneously 10 mg. of dinitrophenol (10 mg. sodium salt per kilo body weight were employed in all the subsequent experiments) per kilo body weight and the blood sugar level determined at various periods following the injection. It was found that approximately 30 minutes following the administration of the drug, the blood sugar began to rise (Fig. 1). Some 90 minutes after injection this rise ceased, and a new level was maintained for several hours.

In order to determine whether the injection of the drug altered the rate of removal of glucose from the blood, each animal was given intravenously 0.25 gm. of glucose per kilo body weight. The glucose was given as a 50% solution 30 minutes following subcutaneous injection of the drug and the blood sugar determined at 15 minute intervals. Figure 1 presents composite curves showing the rate of removal of the glucose from the blood with and without the previous administration of the drug. It will be noted that the rate of removal of glucose is more rapid when dinitrophenol had been given previously. It was observed that while this amount of glucose produced no glycosuria in the control, a small amount of reducing substances appeared in the urine in the first and second hours after dinitrophenol. The amount of reducing substance, if glucose, was insufficient to be entirely responsible for the more rapid disappearance of glucose from the blood after the dinitrophenol injection.

Similar injections of glucose were made 90 minutes following the subcutaneous injection of the drug. This time was selected since, as stated above, it was observed that about 90 minutes following the injection of the drug alone the blood sugar had ceased to rise and become constant. It was found that; although the initial rate of decline of the curve was comparable to that in the previous experiment, when the concentration of blood sugar fell to the level which would have been produced by the drug alone, it leveled out immediately and remained constant for several hours.

Summary. 1-2-4 dinitrophenol causes an hyperglycemia in dogs when injected subcutaneously. The drug also increases the rate at which excess glucose is removed from the blood after quantities of the latter have been given intravenously.