studied may be placed in the following order on the basis of their toxicity indices: Metaphen 12.7; phenol 12.9; Merthiolate 35.3; and mercurochrome 262.0.

Scott and Hill[8] stated that a 1-50 dilution of mercurochrome in alcohol-acetone-water "has a relatively low toxicity as shown by the vigorous way that tissue cultures and transplants have grown after its use." von Oettingen, Calhoun, Badertscher and Pickett[12] reported that the tissue toxicity of mercurochrome was relatively low, but a 5% aqueous solution was distinctly injurious as judged by excised ciliated mucous membranes.

On the basis of the above results it is concluded that mercurochrome is relatively toxic and rated considerably poorer than any of the germicides so far studied when tested by the tissue culture technique.

7967 P

Effect of 1-2-4 Dinitrophenol on Oxygen Uptake of Rat Tissue.

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Since Cutting and Tainter[1] and Magne, Mayer and Plantefol[2] have observed that small quantities of dinitrophenol cause a marked acceleration of the metabolism of animals, it seemed desirable to determine whether this drug accelerates the oxygen uptake of excised tissue.

The experiments here reported are a continuation of those given in a previous preliminary report.[3] The preparation of the rat tissue slices and the measurement of the oxygen uptake was done as previously described,[4] the tissue being suspended in glucose phosphate (pH 7.4) Ringer's solution. Four Warburg vessels were employed in each instance, 2 serving for the control observations. The fol-

[12] von Oettingen, W. F., Calhoun, O. V., Badertscher, V. A., and Pickett, R. E., *J. Am. Med. Assn.*, 1932, **99**, 127.

[1] Cutting, W. C., and Tainter, M. L., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 1268.

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

[3] Muntwyler, E., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 621.

[4] Muntwyler, E., and Binns, D., *Am. J. Physiol.*, 1934, **108**, 80.

lowing experiments were performed. The oxygen uptake of rat liver, kidney and muscle tissue obtained from rats previously injected with dinitrophenol was determined when the tissue was suspended in normal Ringer's solution. Three or more animals were employed in each case. The oxygen uptake of rat liver and kidney tissue obtained from normal animals was also determined when suspended in Ringer's solution containing the drug. In these experiments 2 or more animals were employed for each concentration of the drug. The oxygen uptake of normal rat liver was determined in 5 separate experiments when suspended in normal dog serum and serum from dogs previously injected with dinitrophenol. The response of the rat liver and kidney tissue in the presence of the drug was likewise compared with that obtained employing frog liver and kidney tissue.

The oxygen uptake of rat liver, kidney and muscle obtained from rats previously injected with dinitrophenol did not show an increased oxygen uptake when compared with tissue obtained from control uninjected rats. As a matter of fact, if anything, a slightly decreased rate of oxygen uptake was noted when the tissue from the treated animals was employed. Normal rat liver when suspended in Ringer's solution containing dinitrophenol (dinitrophenol, sodium salt was employed in the following concentrations: 0.005, 0.01, 0.05, 0.1, 0.5 and 1.0 mg. per 100 cc.) showed a questionable increase in the rate of the oxygen uptake in concentrations of the drug of 0.01, 0.05 and 0.1 mg. per 100 cc. (average maximum of 15% obtained with 0.01 mg. per 100 cc.). The oxygen uptake of rat kidney in the same concentrations of dinitrophenol showed no definite difference from the control. The oxygen uptake of rat liver suspended in serum obtained from dogs previously injected with the drug was not different from that of rat liver in normal dog serum. In confirmation of the work of Ehrenfest and Ronzoni[5] and De Meio and Barron[6] it was found that frog liver and kidney suspended in frog's Ringer's solution containing 0.5 mg. of dinitrophenol per 100 cc. showed a definitely increased rate of oxygen uptake. It should be pointed out that McCord[7] observed that dinitrophenol in a concentration of about 1-20,000,000 increases the oxygen uptake of rat liver and kidney (average increase of 18.4%

[5] Ehrenfest, E., and Ronzoni, E., PROC. SOC. EXP. BIOL. AND MED., 1933, **31**, 318.

[6] De Meio, R. H., and Barron, E. S. G., PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 36.

[7] McCord, W. M., *Am. J. Physiol.*, 1934, **109**, 232.

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

7968 P

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.

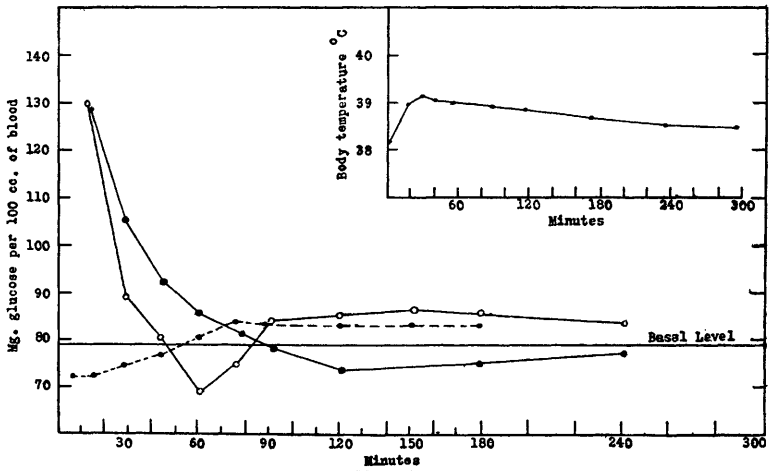

FIG. 1.

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.