

that the hemoglobin production in the rats receiving injections of iron is associated with an increase in the copper content of the body over that of control rats sacrificed at the beginning of the experiment. It has been calculated that the average retention of copper in this group of rats was 73% of the total intake in the form of the copper of the milk, while in the group receiving iron orally it was 17% and, in the group receiving both iron and copper, only 12% of the total intake during the experimental period.

7248

Carotenemia. Its Influence on the Validity of the Icteric Index.

EARL F. NATION AND VICTOR C. MYERS.

From the Department of Biochemistry, School of Medicine, Western Reserve University.

In a paper with Hess¹ one of us called attention to the occurrence of carotenemia. At the time it was pointed out that this might in certain cases cause confusion with icterus. Later it was observed that the carotenemia might be very intense in diabetic patients on the high vegetable diet of the time.

It is obvious that carotene must exert some influence on the icteric index of the blood, a fact which has been appreciated by most of the workers in this field. Fiessinger, Walker and Thierry² from their work felt that the effect was negligible, Boeck and Yater³ found that carotene accounted for from 10 to 55% of the icteric index, while White⁴ concluded that the influence was negligible except in marked cases of xanthemia accompanying diabetes.

The subject has been reinvestigated on 161 patients, 75 of whom were suffering from diabetes mellitus, the carotene being determined in terms of the icteric index (lipochrome index) and in mg. per 100 cc. of serum. In 43 diabetic cases on which icteric indices were determined carotenemia was found to account for an average of 45% of the corresponding icteric indices, the extremes being 19.3 and 70.5%. The average icteric index was 7.1. The average

¹ Hess, A. F., and Myers, V. C., *J. Am. Med. Assn.*, 1919, **73**, 1743.

² Fiessinger, N., Walter, H., and Thierry, J. E., *Compt. rend. Soc. de Biol.*, 1928, **98**, 1299.

³ Boeck, W. C., and Yater, W. M., *J. Lab. and Clin. Med.*, 1929, **14**, 1129.

⁴ White, F. D., *J. Lab. and Clin. Med.*, 1931, **17**, 53.

lipochrome index for the 75 diabetic patients was 3.4, corresponding to an average carotene content of 0.25 mg. per 100 cc. of blood.

The average lipochrome index for the 86 non-diabetic patients was 1.7 with an average of 0.11 mg. carotene per 100 cc. of blood. In 10 of these cases with icteric indices below 10, carotenemia was responsible for an average of 20.6% of the corresponding icteric indices, while in 21 cases with icteric indices between 10 and 100 it averaged 8.6% and in 6 cases with icteric indices above 100 the lipochrome indices averaged only 1.2% of the corresponding icteric indices.

From the above findings it would not appear that carotenemia alters the validity of the icteric index except in cases of marked carotenemia such as may be found in some diabetic patients, and then only if the icteric index is quite low.

7249 P

Effect of Dinitrophenol on the Oxygen Uptake of Rat Tissue.

EDWARD MUNTWYLER.

From the Department of Biochemistry, School of Medicine, Western Reserve University.

The observation by Cutting and Tainter¹ of a marked acceleration of the metabolism of animals injected with small quantities of dinitrophenol stimulated a study of the effect of the injection of the dinitrophenol on the oxygen uptake of rat tissues. Rats were injected with the sodium salt of dinitrophenol (40 mg. per kilo of body weight). After a period of from 30 to 40 minutes the animals were killed by a blow on the head and the oxygen uptake of the tissue determined as quickly as possible, employing the technique previously described.² The respiratory quotient was determined as described by Richardson.³

Table I presents the results which were obtained employing rat liver. It is seen that when phosphate Ringer's solution was employed, the oxygen uptake of rat liver slices obtained from the injected animals was essentially the same as that obtained with the

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

² Muntwyler, E., and Binns, D., *Am. J. Physiol.*, in press.

³ Richardson, H. B., *Physiol. Rev.*, 1929, **9**, 61.