

The leucocytes were apparently unaffected.

SUMMARY.

(1) Exposure to the mercury vapor quartz lamp has produced, within less than a week, a distinct platelet increase, in 6 normal young rabbits.

(2) This increase varied from 40 to 100 per cent of the original normal, but always amounted to at least twice that of the normal variation in the animal. The platelet count returned to normal rather rapidly after having reached its maximum.

(3) The red cells, at first decreased, began to rise at about the time of the platelet peak, returned to normal within 6 days, reached a million above normal in 2 weeks and in 2 cases maintained this level for 3 weeks after cessation of radiation.

---

<sup>1</sup> Sooy, J. W., and Laurens, Henry, *Proc. Soc. Exp. Biol. and Med.*, 1924, xxii, 114.

<sup>2</sup> Sooy, J. W., and Moise, T. S., *J. Am. Med. Assn.*, 1926, lxxxvii, 94.

3254

**A Seasonal Occurrence of Ketonuria in Fasting Rats Accompanied by Changes in Carbohydrate Metabolism.**

GERTY T. CORI AND CARL F. CORI.

*From the State Institute for the Study of Malignant Diseases, Buffalo, N. Y.*

It was found that in the summer months, from the 24th to the 48th hour of fasting, an average of 6.1 mg. of total acetone bodies was excreted per 100 gm. of body weight per 24 hours. The determinations were made by Van Slyke's method. Beginning with late September, the excretion diminished to 1.9 mg. per 100 gm. of body weight per 24 hours. Non-fasting rats excreted 0.4 mg. per 100 gm. per 24 hours. Metabolism experiments, made more or less continuously for a whole year, showed that from October until May the fasting respiratory quotient was in most instances above 0.700, while the opposite was true in the summer months. Since the housing, food and care of the rats was the same throughout the year, the appearance of ketonuria in the summer months was attributed to a seasonal change in fat metabolism. Apparently, in the winter months the fasting rat can oxidize its body fat completely without the simultaneous oxidation of carbohydrates, while this is

no longer possible in the summer months. The appearance of ketonuria in fasting rats in the summer months offered a possibility of studying various phases of carbohydrate metabolism during that period.

In the winter months the intravenous glucose tolerance of non-fasting and of fasting rats was found to be close to 2.5 gm. per kilo per hour.<sup>1, 2</sup> In the summer months the tolerance of non-fasting rats remained unchanged, while the tolerance of fasting rats was diminished to 1.6 gm. per kilo per hour or by 36 per cent. In order to decide, whether a decrease in sugar oxidation or in glycogen formation was responsible, recovery experiments were undertaken. In the winter months, from 750 mg. of glucose absorbed from the intestine per 100 gm. of body weight per 4 hours, 281 mg. were oxidized and 388 mg. were converted into glycogen. This corresponds to a recovery of the absorbed sugar of 89 per cent. In the summer months, from 720 mg. of the absorbed glucose, only 72 per cent were accounted for, 140 mg. being oxidized and 380 mg. being converted into glycogen. It is evident that the sugar oxidation in fasting rats is strongly diminished in the summer months. This seems to be the explanation why the intravenous glucose tolerance was found to be lower. Interestingly enough the glycogen formation was not changed. This would be difficult to explain, if one assumes that sugar oxidation and glycogen formation are linked processes. The lower recovery of the absorbed sugar in the summer months may be due to a retention of the sugar as such, or the sugar is retained in some intermediary form on its way to oxidation. This problem will be investigated further. Insulin injections in the summer months led to a better recovery due to an increased sugar oxidation.

---

<sup>1</sup> Cori, Carl F., *PROC. SOC. EXP. BIOL. AND MED.*, 1925, xxii, 127.

<sup>2</sup> Cori, Carl F., and Cori, Gerty T., *PROC. SOC. EXP. BIOL. AND MED.*, 1926, xxiii, 461.