

The mean body weights are given for the beginning and end of the test period:

Lactose (6 females, 4 males) 283.9 gm.—246.3—loss 37.6 gm.

Glucose (6 females, 4 males) 311.6 gm.—314.2—gain 2.6 gm.

Sucrose (3 females, 2 males) 307.8 gm.—318.7—gain 10.9 gm.

The liver glycogen averaged  $3.15 \pm 0.12\%$  on the lactose diet;  $4.89 \pm 0.21$  on the glucose, and  $4.89 \pm 0.20$  on the sucrose. Expressing the glycogen content as milligrams per gram of body weight gave  $0.936 \pm 0.057$ ,  $1.534 \pm 0.066$ , and  $1.764 \pm 0.088$  mgm., respectively. The glycogen is significantly lower on the lactose diet.

The mean absolute liver weights were  $7.04 \pm 0.25$  gm. on the lactose diet,  $9.84 \pm 0.36$  on the glucose, and  $11.13 \pm 0.70$  on the sucrose. Expressing the liver weight as per cent of body weight gave  $2.94 \pm 0.11$ ,  $3.15 \pm 0.07$ , and  $3.62 \pm 0.13$ , respectively.

The calorie intake per gram of body weight during the last 24 hours was determined. This was 0.1209 for lactose, 0.1728 for glucose, and 0.1656 for sucrose. If the liver glycogen, expressed as milligrams of glycogen per gram of liver, be divided by the calorie intake, we find that for each cal. (per gm. of body weight) intake on the lactose diet there are formed 260 mgm. of glycogen per gm. of liver. On the glucose diet the figure is 283, and on the sucrose 295. These figures suggest that if lactose were as readily digested and absorbed as the other sugars, we should find that glycogen is formed with equal ease from sucrose, glucose and lactose.

#### 4961

### Glycogen Formation in Rats. IV. Diet Containing 87.5 Per Cent of Total Caloric Value in Maltose.

ESTHER M. GREISHEIMER AND OLGA H. JOHNSON.

*From the Department of Physiology, the University of Minnesota.*

Fifteen healthy young male rats, varying from 145 to 226 gm. in weight, were given us by Dr. Palmer of the University Farm. They had been on a normal diet, and had not been subjected to experimental procedure. We placed 5 of them on McCollum's Stock Diet I, for controls. The remaining 10 were placed on a diet containing 87.5 gm. of maltose, 14.7 gm. casein (85% casein), and 4 gm. of salt mixture 185. This diet had a caloric value of 3.77 per gm., of which 87.5% was derived from maltose and 12.5%

from casein, not considering digestibility. The analysis and caloric value of the stock diet was given in a previous publication.<sup>1</sup> The Maltose diet was supplemented by vitamin feeding daily.<sup>2</sup> The experiment was in progress for 16 days.

Both the control and the experimental rats gained in weight. The former averaged 3.4 gm. per day, the latter 3.2 gm. The average daily intake of food was 14.13 gm. on the stock, and 14.19 gm. on the maltose diet. The daily water intake averaged 20.76 cc. on the stock, and 15.91 cc. on the maltose diet.

The following results were found:

TABLE I.

	Liver Weight gm.	Liver as % of Body Wt.	% of Liver Glycogen	Mgm. Liver Glycogen per Gm. Body Wt.
Stock diet	10.08 ± 0.11	4.37 ± 0.17	4.86 ± 0.14	2.129 ± 0.075
Maltose diet	10.50 ± 0.18	4.50 ± 0.20	5.93 ± 0.24	2.686 ± 0.132

The difference in liver weight is not statistically significant. The liver glycogen formed on the maltose diet is significantly higher than that formed on the stock diet.

If we consider the last 24-hour intake in terms of calories per gram of body weight, we find 0.2785 for the stock, and 0.2854 for the maltose diet. If the liver glycogen, expressed in terms of milligrams per gram of liver, be divided by the caloric intake, the quotient is 175 for the stock and 208 for the maltose rats. The ability to form glycogen is greater on the maltose diet, as would be expected.

## 4962

### Direct Vestibulo-Spinal Fibers in the Medial Longitudinal Fasciculus of the Cat.\*

A. T. RASMUSSEN.

*From the Department of Anatomy, Medical School, University of Minnesota.*

In spite of a considerable amount of experimental work on the fiber connections of the vestibular nuclei, there are still some points

<sup>1</sup> Greisheimer, Esther M., and Johnson, Olga H., *J. Nutrition*, in press.

<sup>2</sup> Greisheimer, Esther M., and Johnson, Olga H., *Am. J. Physiol.*, in press.

\* Aided by a grant from the Medical Research Fund of the Graduate School, University of Minnesota.