

TABLE I.  
Mg. iodine absorbed per 100 cc. serum of normal rats and of rats fed on a fat-free diet.

Normal rats on stock diet* Iodine absorbed	Rats on a fat-free diet** Iodine absorbed
501	330
435	379
670	395
917	271
646	296
583	273
530	277
505	252
Aver. 598	309

\*McCollum's diet No. 1.<sup>4</sup>

\*\*550 B + vitamin supplement, Burr and Burr.<sup>5</sup>

number of the fats. The work of Bloor,<sup>6</sup> Maynard and McCay,<sup>7</sup> and Bender and Maynard<sup>8</sup> indicates large drops in the phosphatides, cholesterol and total lipids of the blood when low fat diets are fed. No iodine number of the serum fatty acids is given by these workers.

## 6857

### Iodine Numbers of Serum Lipids in Rats Fed on Fat-Free Diets.\*

ARILD E. HANSEN AND GEORGE O. BURR.

*From the Departments of Pediatrics and Botany, University of Minnesota.*

Our preliminary data<sup>1</sup> indicated that the serum from rats fed on fat-free diets absorbed less iodine than the serum from control animals. We have since attempted to determine whether the differences found could be due to smaller amounts of total lipids or to lipids having a lower iodine number.

The alcohol-ether extract of the serum was prepared in the usual manner.<sup>2</sup> The iodine absorption was determined on the alcohol-

<sup>5</sup> Burr, G. O., and Burr, M. M., *J. Biol. Chem.*, 1930, **86**, 587.

<sup>6</sup> Bloor, W. R., *PROC. SOC. EXP. BIOL. AND MED.*, 1931, **28**, 701.

<sup>7</sup> Maynard, L. A., and McCay, C. M., Cornell University Agricultural Experiment Station, Bull. 543, September, 1932.

<sup>8</sup> Bender, R. C., and Maynard, L. A., *J. Dairy Sci.*, 1932, **15**, 1.

\* This work was supported by grants from the National Live Stock and Meat Board, from the Medical Research Fund and General Research Fund of the University of Minnesota.

<sup>1</sup> Hansen, Arild E., and Burr, George O., *PROC. SOC. EXP. BIOL. AND MED.*, 1933, **30**, 1200.

<sup>2</sup> Bloor, W. R., *J. Biol. Chem.*, 1928, **77**, 53.

ether extract of the serum as previously described.<sup>1</sup> Bloor's method<sup>2</sup> was used to determine the total fatty acids and cholesterol.

The results are given in Table I.

TABLE I.  
Serum lipids and iodine numbers of serum fatty acids of rats on a fat-free diet and of control rats.

I <sub>2</sub> absorbed	Normal control rats*		Total lipids	I <sub>2</sub> No.
	Cholesterol	Total fatty acids Mg. per 100 cc. serum		
431	111	280	391	128
428	116	271	387	129
548	84	306	390	160
308	74	209	283	124
554	113	367	480	130
478	118	292	410	137
436	102	256	356	145
Aver. 455	102	283	385	136
		Rats on a fat-free diet**		
282	93	200	293	110
393	110	290	400	110
323	67	231	298	122
444	109	327	436	114
530	106	437	543	105
309	88	190	278	132
423	140	283	423	117
330	100	218	318	121
262	84	212	287	108
330	75	252	337	100
308	98	211	308	111
269	87	285	372	74
267	78	239	317	90
267	86	232	318	89
Aver. 339	87	258	352	107

\*McCullum's diet No. 1.<sup>3</sup>

\*\*550 B + vitamin supplement, Burr and Burr.<sup>4</sup>

In the previous study the animals were not starved before the specimens were obtained. In this series uniform starvation periods were adopted in order to eliminate abnormal values due to the post-absorptive state. The average values of the cholesterol and the total fatty acids are less in the experimental animals than in the control groups, which agrees with findings of Bloor,<sup>5</sup> Maynard and McCay,<sup>6</sup> and Bender and Maynard.<sup>7</sup> The iodine numbers indicate

<sup>3</sup> McCullum, E. V., and Simmonds, N., *J. Biol. Chem.*, 1918, **33**, 63.

<sup>4</sup> Burr, George O., and Burr, M. M., *J. Biol. Chem.*, 1929, **82**, 345; 1930, **86**, 587.

<sup>5</sup> Bloor, W. R., *Proc. Soc. Exp. Biol. and Med.*, 1931, **28**, 701.

<sup>6</sup> Maynard, L. A., and McCay, C. M., *Cornell University Agricultural Experiment Station, Bull.* 543, September, 1932.

<sup>7</sup> Bender, R. C., and Maynard, L. A., *J. Dairy Sci.*, 1932, **15**, 1.

that the serum fatty acids of the rats fed on a fat-free diet are less unsaturated than those of the controls.

*Summary.* (1) The cholesterol and total fatty acids of the serum in rats fed on a fat-free diet were found to be lower than in control animals. (2) The iodine number of the serum fatty acids from rats fed on fat-free diets indicates that the fatty acids are less unsaturated than those of controls.

6858

### Survey to Determine the Incidence of Bang's Disease in Minnesota Cattle.\*

C. P. FITCH AND C. R. DONHAM.

*From the University of Minnesota, University Farm, St. Paul, Minn.*

Estimates of the prevalence of Bang's disease (contagious abortion) have been based on the results of agglutination tests that are available from laboratories engaged in the control of this disease. Such data do not give a true picture because the serum samples are from herds that request service. Usually testing is carried out only in herds in which there is reason to suspect the presence of Bang's disease. Also, retests of negative herds (from which the disease has been eliminated) tend to invalidate such figures as an estimate of the prevalence of this disease.

Reliable data on the incidence of Bang's disease are needed, not alone for obvious economic reasons, but also to provide a basis of estimation of the dependability of the agglutination method as a control measure for this disease. It has been shown,<sup>1</sup> by adequate experiments, that the test-tube agglutination test is exceedingly accurate with serums having either no specific agglutinin content or high agglutinin content (titre 1:250 or above). It has also been shown, however, that serums having a low to medium agglutinin content (titre 1:25 to 1:100) frequently give variable agglutination

---

\* Some of the researches upon which this paper is based were made possible by a grant from the Bureau of Animal Industry of the United States Department of Agriculture. Published with the approval of the Director as Paper No. 1182 of the Journal Series of the Minnesota Agricultural Experiment Station.

<sup>1</sup> Fitch, C. P., Donham, C. R., Bishop, Lucille M., and Boyd, W. L., *Minn. Tech. Bull.*, 1930, 73.