

the synthesis of a highly unsaturated phospholipid is in agreement with the observation of Eckstein⁴ that oleic acid stimulates the production of arachidonic and linoleic acids.

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Effect of Inanition on the Phospholipid Fatty Acids of the Rat.

ROBERT GORDON SINCLAIR. (Introduced by W. R. Bloor.)

From the Department of Biochemistry and Pharmacology, The University of Rochester School of Medicine and Dentistry, Rochester, New York.

Terroine and Belin¹ have asserted that the lipid component of the *élément constant* of whole animals and individual tissues represents the phospholipids of normal animals, and that the degree of unsaturation of the fatty acids of the *élément constant* (*i. e.*, the phospholipid) is an invariable characteristic, quite independent of the type of diet. The latter assertion is quite at variance with the observations of the author.²

The *élément constant* of Terroine represents the residual substance of animals which have died of inanition. On the other hand, the data obtained by the author apply solely to the acetone-insoluble lipids of normal, well-fed animals. This distinct difference suggests the possibility that normal animals contain reserve phospholipid which alone is influenced in its composition by the type of diet and which disappears on fasting.

The data in the accompanying table show that in fasting rats the decrease in phospholipid fatty acids is roughly proportional to the decrease in the weight of the animal, or, in other words, the percentage of phospholipid in the whole rat remains relatively constant. Furthermore there is no change in the composition of the phospholipid during fasting, the iodine number of the fatty acids remaining constant.

These facts indicate that the phospholipid of normal animals does not consist of a stable portion, invariable in amount and in composition, and a labile reserve portion. On the contrary these data strengthen the opinion that the phospholipids are vital constituents

⁴ Eckstein, H. C., *J. Biol. Chem.*, 1929, lxxxi, 613.

¹ Terroine, E. F., and Belin, P., *Bull. Soc. chim. biol.*, 1927, ix, 12.

² Sinclair, R. G., *Proc. Soc. Exp. Biol. and Med.*, 1929, xxvi, 436; *J. Biol. Chem.*, 1929, lxxxiii, 117.

of the protoplasm, that they are subject to wear and tear, and that the fatty acids of the food are utilized in the process of repair.

TABLE I.
Effect of Fasting on Lipids of the Rat.

Experi- men- tal con- di- tions	Live Weight			Phospholipid fatty acids					Iodine No.	Neutral fat			Unsat- ur- i- f- i- a- b- l- e Weight in moist tissue %
	Initial	Final.	De- crease.	Weight			Weight in moist tissue	Fatty acids		I.N.			
				Absolute	Estimated decrease*	In moist tissue		In dry tissue			% I.N.		
							gm.					gm.	
Controls	102.0			1.125			1.10	5.49	127	5.92	67	0.312	
	108.5			1.165			1.07	5.30	126	5.93	67	0.288	
Fasted: 3 days	103.0	85.5	17	0.900	0.21	19	1.05	4.57	127	8.58	67	0.282	
	103.0	76.5	26	0.830	0.28	25	1.08	4.82	130	1.70	69	0.402	
5 days	103.5	83.0	20	0.795	0.32	29	0.96	4.30	125	6.57	69	0.386	
	106.5	83.0	22	0.830	0.32	28	1.00	4.32	127	8.71	67	0.518	

* Estimated decrease in phospholipid fatty acids = (initial wt. of rat $\times$ 1.08) — absolute wt. of phospholipid fatty acids.