

Seventh meeting.¹

Physiological Laboratory of the New York University and Bellevue Hospital Medical College. May 18, 1904.

39. "The lecithin content of fatty extracts from the kidney" (preliminary communication): EDWARD K. DUNHAM.

Rosenfeld has shown that the percentage of the alcohol-chloroform extracts from the dried kidneys of dogs, both normal and "fatty," fluctuates within very narrow limits. He calls these extracts "fat," and regards the microscopic examination as entirely untrustworthy for gauging the amount of fat in the kidney. His work on other organs has led him to the conclusion that, when the fat content is increased in the cells, it has been transported from the fat depots of the body. It appeared to the author of interest to compare the extracts obtained from the kidney by Rosenfeld's method with similar extracts from the depot fats. It was at once evident that they differed markedly in the percentage of phosphorus they contained, as is shown by the following analytic results :

Alcohol-chloroform extracts.	Percentage of Phosphorus.
Human kidney (mean of 28 analyses).....	1.3849
Panniculus adiposus (4.2288 gms.).....	0.0026
Perinephritic fat (5.6750 gms.).....	0.0069

The extract from the kidney contains from 200 to 500 times as much phosphorus as the extract from depot fat. These facts suffice to show that the two extracts are not directly comparable, and to throw doubt upon the idea advanced by Rosenfeld that the fat in "fatty" organs is a simple infiltration from the depots of the body.

The phosphorus in these extracts was found to be wholly organic in character. Protagon could not be detected even in 400 gms. of the tissue. The quantity of jecorin that may have been present was too small to influence materially the analytic results. The most probable compounds containing the phosphorus are forms of lecithin. The barium hydroxid—platinic chlorid method for the separation of cholin was employed, with the following results :

¹ Reprinted from *Science*, 1904, xx, p. 79; *American Medicine*, 1904, vii, p. 950; *Medical News*, 1904, lxxxv, p. 230.

	Extract. Grams.	Phosphorus. %.	Platinum. Grams.	Lecithin in the extract (calculated as distearyllecithin), %.
I	0.4600	1.43	—	37.23
	0.4600	1.47	—	37.45
	1.5859	—	0.0650	34.50
II	0.6032	1.12	—	29.11
	0.6032	1.11	—	28.99
	2.1556	—	0.0711	27.40

Before incineration, in the first case, the platinum salt in the crucible weighed 0.2009 gm. The platinum, therefore, constituted 32.7 % of the salt. Cholin platinic chlorid contains 31.6 % of platinum. It appears highly probable, however, that some of the platinum salt was decomposed during the concentration of its solution with heat. It is also possible that some of the cholin suffered decomposition, or was lost, in the manipulations preceding its precipitation with platinic chlorid. With these considerations in mind, the foregoing results render it highly probable that the phosphorus is present in some form of lecithin, but, although these calculations are based on distearyllecithin, it is certain that this is not the only lecithin present. The fact that lecithin obtained in moderate purity (about 99 %) from the kidney extract promptly blackens with osmic acid, indicates that the oleic acid radical is present. The recognition of this fact would make but trifling changes in the calculations in this report.

The foregoing analyses appear to justify the conclusion that one may, at least tentatively, assume the phosphorus content of the extracts obtained to be dependent upon the presence of some form of lecithin.

Upon this assumption are based the calculations given in the summary at the top of the next page.

These analytic results demonstrate that even in the kidney, which cannot be regarded as one of the fat depots of the body, and which probably plays little, if any, part in the general fat metabolism, the lecithin content must be taken into consideration in any study of the fatty extract. The limited number of the observations here referred to, do not justify conclusions bearing upon the question of the nature of the fatty changes met with in the kidney, but it is the author's intention to continue the study of this subject.

	<i>Extract.</i> ¹	<i>Phosphorus.</i>	<i>Lecithin.</i>	<i>Lecithin.</i>	<i>Autopsy Report.</i>	
	% of dry organ.	% of the extract.	% of the extract.	% of dry organ.	Cause of death.	Weight of kidney. Grams.
<i>Human Kidneys.</i>						
I	11.42	2.11	55.07	6.29	Pneumonia and hepatic abscess.	200
	12.48	2.00	52.03	6.49		
II	11.44	1.35	35.14	4.02	Tuberculosis.	200
XI	15.40	1.18	30.84	4.76	Moderately fatty kidneys.	—
	15.51	1.19	31.09	4.80		
<i>Beef Kidneys.</i>						
II	15.02	2.10	54.64	8.21	—	—
<i>Dog Kidneys.</i>						
I	14.93	2.04	53.29	7.95	—	—
<i>Rabbit Kidneys.</i>						
I	16.59	2.53	66.06	10.96 ²	—	—

40. "On the phloridzin test in Bright's disease": PHŒBUS A. LEVENE and LYMAN B. STOOKEY.

Investigation of the action of phloridzin in Bright's disease has a theoretical as well as a practical interest. The mechanism of kidney diabetes is as yet imperfectly understood. The original idea that it was due to a change in the permeability of the kidney epithelium has gradually lost support, and instead there is a growing belief in the hypothesis that, in kidney diabetes, the sugar owes its origin to an exaggerated katabolic condition of the kidney. This view was first expressed by Dr. Levene in 1894. In support of this theory, evidence was brought forward to show that in animals with injured kidneys, phloridzin fails to bring about glycosuria, or causes it in less degree than in normal animals. However, it is impossible to injure, by means of drugs or by mechanical interference, only one special part of the kidney. In the course of Bright's disease there are known conditions under which the involvement of either the epithelium or of the glomeruli predominates to a very great extent, and this, of course, enables one to study the seat of the sugar formation within the kidney. The observations of most authors tend to show that when the epithelium of the kidney is injured, administration of phloridzin fails to cause glycosuria or does so in very slight degree.

The authors injected simultaneously phloridzin and methylene-blue, and compared the course of the elimination of the dye with

¹ The author presented a large number of data. The table here given shows only a few examples of the many results obtained.

² 2.24% of the fresh kidney.