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Lipoids in the Kidney of Adrenal Insufficiency.

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The presence of large amounts of lipoid in the cortex of the kidneys of adrenalectomized cats has been described.[1] The staining reactions indicated the presence of cholesterin-esters, cholesterin-fatty acid mixtures, and neutral fats.

A study has been made of the chemical nature of these substances. Thirteen completely adrenalectomized cats and 8 normal cats were used in this work. The adrenalectomized cats survived an average of 12.7 days, the survival periods varying from 5 to 26 days. Some of the animals were injected daily with adrenal extracts.

For the chemical analysis, one gram of fresh, ground kidney is extracted with a solution of chloroform and alcohol, 1-3, and made up to 20 cc. Aliquot parts are taken for the following determinations. One portion is evaporated to dryness and weighed for *total lipoids*. The *free acid* is titrated directly with .01 N NaOH. In calculating the weight, 280 is taken as the molecular weight. The volatile acids are separated from the non-volatile by saponifying, acidifying, and aerating over a boiling water bath. The residue is titrated with .01 N NaOH for non-volatile acids and the contents of the receiving tube for the volatile acids. The molecular weight of the non-volatile constituents is taken to be 280, that of the volatile to be 100. Cholesterol and phosphorus are determined by the standard colorimetric methods. The iodine value is reported in milligrams of iodine absorbed per gram of original kidney material.

TABLE I. *Results, per gram of kidney.*

	Average in normal cats	Average in adrenalectomized cats	Difference
	mg.	mg.	Per cent
Total lipoids	70.5	107.1	51.9 increase
Free acids	9.97	20.97	110.4 "
Volatile acids	1.86	5.29	184.3 "
Non-volatile acids	40.15	50.49	25.6 "
Cholesterol	2.16	3.83	77.7 "
Iodine (absorbed)	26.14	30.50	16.7 "
Phosphorus	1.40	1.01	27.8 decrease

The per cent increase in iodine absorbed in the kidneys of adrenalectomized cats is less than the per cent increase in the total lipoids. Therefore, the extra fat contains a smaller proportion of double bonds than the normal. The kidney phosphorus decreases after removal of the adrenals, even though the total lipoids markedly increase. This may mean that there is a cellular degeneration along with the deposition of less active fat. If one calculates the amount of fatty acids derived from the phospholipoids and compares it with the non-volatile acids, in the normal about two-thirds of the fatty acids are from the phospholipoids and in the operated animals only about one-third.

The chief source of increase in the ordinary fatty acids is in the free fatty acid fraction. The neutral fats have increased too, but to a lesser extent.

The most striking fat change is in the volatile fraction. The amount of these esters of the lower fatty acids is small in normal kidneys, but is about three times as large in the operated animals.

Though the total cholesterol in the adrenalectomized animals is 78 per cent larger than in the normals, the increase in milligrams is small. Whether this increase is an ester or free cholesterol is yet to be determined.

A similar chemical study is being made of the lipoids in blood and urine.

This is a preliminary report.

[1] Hartman, F. A., MacArthur, C. G., Gunn, F. D., Hartman, W. E., and MacDonald, J. J., *Am. J. Physiol.*, 1927, lxxxi, 244.

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Simultaneous Recording of Peristalsis and Action of Pyloric Valve in Isolated Stomach of Frog.

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The method consists essentially of enclosing the excised stomach in a small volume recorder (a 2-way dog size arterial cannula serves the purpose). A sufficient length of oesophogus and intestine are removed with the stomach to permit introduction of an inflow cannula into the former and an outflow cannula into the latter in a way not to interfere with the valves at either end of the stomach. The