This nuclear change has been observed in cells both with and without cytoplasmic vacuoles. It has never been observed in an acidophile nor in the basophiles of a non-vacuolated gland, whether control or following a short period of thyroidectomy. It seems highly probable that there is some correlation between the nuclear change and the cytoplasmic vacuolation and that the former, like the latter, is a characteristic response to thyroidectomy in Triturus.

10022

Choline and Pancreas Extract on Fatty Livers and Ketosis Due to Ant. Pituitary Extract.

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These experiments were carried out when there was reason to believe that the pancreas extract described by Dragstedt, *et al.*,[1] under the name of lipocaic was a new fat metabolizing hormone. Recent developments[2, 3] suggest that this substance owes its activity to the choline and protein content and somewhat diminish the original intent of this work. However, the data reported here are still of interest in connection with the further differentiation of factors influencing fat transport to and from the liver.

The albino rats used were removed from the stock diet, fasted for 24 hours, weighed and urine collections commenced. The administration of 2 cc of 5% NaCl per day to each rat insured good urine volumes. The rats comprising a given group through the 6 experiments were all treated simultaneously. The ketogenic anterior pituitary extract was prepared according to the method of Best and Campbell.[4] The rats in experiments 2, 3, and 5 received 4 cc per rat per day subcutaneously. The rats receiving choline hydrochloride were given 2 cc of 10% solution by stomach tube at the beginning of each 24-hour period of urine collection. The pancreas extract was prepared according to the method of Dragstedt, *et al.*,[1] and was ad-

1 Dragstedt, L. R., Van Prohaska, J., and Harms, H. P., *Am. J. Physiol.*, 1936, **117**, 175.

2 Best, C. H., and Ridout, J. H., *Am. J. Physiol.*, 1938, **122**, 67.

3 MacKay, E. M., and Barnes, R. H., PROC. SOC. EXP. BIOL. AND MED., 1938, **38**, 410.

4 Best, C. H., and Campbell, J., *J. Physiol.*, 1936, **86**, 190.

TABLE I.

Grp	*Sex	Body weight †Initial g	Body weight Final g	Liver weight †Body surface cm²	Liver weight Observed g	Liver weight Per sq. dcm. body surface g	Liver fat %	Liver fat Per sq. dcm. body surface mg	Ketone excretion in mg per sq. dcm body surface per day 1	2	3	N excretion per sq. dcm. body surface per day mg	‡Ant. pituitary extr. g	§Pancreas extr. g	Choline hydrochloride mg
Exp. 1—Controls, no treatment															
A	♀	175	154	354	4.87	1.37	4.57	63	2	6	12	29			
B	♂	175	161	356	4.48	1.25	4.07	51	8	9	4	32			
Exp. 2—Ant. pituitary extract															
A	♀	175	158	354	5.79	1.62	7.62	125	30	36	25	35	.41		
B	♂	179	169	360	5.35	1.48	5.31	80	47	25	20	31	.41		
Exp. 3—Ant. pituitary extr. and pancreas extr.															
A	♀	174	165	352	6.71	1.88	6.14	116	26	35	20	36	.41	8.7	
B	♂	179	177	361	5.82	1.61	5.05	81	44	28	16	37	.41	8.3	
Exp. 4—Pancreas extr.															
A	♀	176	161	354	5.12	1.43	3.25	46	1	0	1	34		8.6	
B	♂	180	168	362	4.65	1.28	4.94	64	5	2	2	30		8.3	
Exp. 5—Ant. pituitary extr. and choline															
A	♀	178	163	357	5.98	1.66	6.52	108	39	24	11	32	.41		57
B	♂	182	170	365	5.72	1.57	4.87	77	42	16	5	38	.41		55
Exp. 6—Choline															
A	♀	177	156	356	4.54	1.28	3.88	49	3	2	2	34			57
B	♂	182	166	365	4.53	1.24	3.78	46	4	2	2	34			54

*The female groups were composed of 5 rats and the male groups of 7 rats each.
†Body weight when the feeding of the special diet was commenced and from which the body surface is calculated.
‡Weight of desiccated anterior pituitary gland which the extract given represented.
§Weight of fresh pancreas equivalent to the extract used. See text for nature of extract.
Doses listed in last 3 columns are in relation to sq. dcm. body surface per day.

ministered in a solution containing 20.36% total solids and 2.42% nitrogen at a rate of 1 cc per sq dcm body surface per day. Nitrogen determinations were made by the macro Kjeldahl method and ketone bodies were determined by Van Slyke's method. Liver "fat" was determined by saponification, acidification, and extraction with petroleum ether.

The data presented in Table I show that the development of a significant ketonuria is uniformly accompanied by a deposition of fat in the liver which ensues when the anterior pituitary extract is administered to a fasting rat. Although both choline and the pancreas extract may have caused a slight diminution in the liver fat content of the control rats neither of these agents had a significant influence upon the increase in liver fat produced by the anterior pituitary extract (Exps. 2, 3, and 5). The ketonuria of both the choline and pancreas extract treated control rats (Exps. 4 and 6) was very slightly but definitely less than that of the controls (Exp. 1). The pancreas extract had no effect whatsoever upon the ketonuria due to the anterior pituitary extract although it was measurably reduced by the choline. This is in contrast to the ineffectiveness of choline in influencing the ketonuria which occurs during fasting after the production of a fatty liver by dietary means.[5]

Summary. The deposition of fat in the liver of fasting rats due to certain anterior pituitary extracts is not influenced by the administration of choline or a pancreas extract called lipocaic. The ketonuria which accompanies these fatty livers is not affected by the administration of the pancreas extract but is slighly reduced by feeding choline.

10023

Classification of Streptococci from Cases of Endocarditis.

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Sherman[1] recently offered a method of classifying the streptococci based mainly on physiological* tests which include growth at

[5] Deuel, H. J., Jr., Murray, S., Hallman, L. F., and Tyler, D. B., *J. Biol. Chem.*, 1937, **120**, 277.

[1] Sherman, James M., *Bact. Rev.*, 1937, **1**, 1.

* The term physiological includes all tests other than fermentative tests.