

threshold for reflex gastric inhibition from intestinal distention. Whether this is an increased irritability of the gastric inhibitory mechanism or of intestinal receptors cannot be said. It is of interest to know that increased mechanical pressure in the lumen of the intestine may reinforce a visceral inhibitory reflex and especially one concerned with gastric motility.

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Liver Lipids of the White Rat Following Chloroform Poisoning, Insulin Administration and Fungus Infection.

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The effect of liver injury on the amount and distribution of the liver lipids has been the subject of a limited amount of investigation, with a view to gaining a better understanding of the relation between the phospholipids and the other fatty constituents of that organ. Theis¹ found for the normal liver tissue of beef, rabbits and humans that the relation between the phospholipid and neutral fat is quite constant and may be expressed as an equilibrium, 55 to 60% phospholipid $\rightleftharpoons$ 45 to 40% neutral fat, an equilibrium which is readily displaced as a result of fatty degeneration, insulin administration and disease. The abnormal organs seldom showed either less or more total lipid than the normal tissue but the percentage of phospholipid was always less. Since results obtained in this laboratory indicated that the ratio of phospholipid to neutral fat for normal liver tissue is about 72% to 22%, higher than that reported by Theis, it was felt that this problem deserved further study.

The white rat was used as the experimental animal and the effect of chloroform poisoning, insulin administration and fungus infection (*Aspergillus* and *Sporothrix*) on the amount and distribution of the liver lipids was determined. The experiments were carried out on pairs of litter mates of the same sex and approximately the same weight, one serving as the control and the other as the experimental animal. The rats were killed by a blow on the back of the head and the livers removed immediately. The total fatty acid and phospholipid contents were determined by the oxidative methods of

¹ Theis, E. R., *J. Biol. Chem.*, 1928, **76**, 107; 1928, **77**, 75; 1929, **82**, 327.

TABLE I.
Distribution of Liver Lipids of Adult White Rat Following (a) Chloroform Poisoning, (b) Insulin Injection and (c) Fungus infection.
(Calculated on the basis of moist weight.)

	Liver of Body Wt. %	Moisture %	Total Lipid %	Phospholipid %	Neutral Fat %	Cholesterol %	Phospholipid : Neutral Fat† %
(a) Rats given 1 to 2 hours chloroform anesthesia and killed 24 hours later. Liver showed distinct signs of fatty degeneration.							
Normal	2.98±0.36	68.4±0.4	4.08±0.56	2.97±0.25	0.91±0.36	0.22±0.03 (91±9)*	72 : 22 ± 6
Expl.	3.03±0.37	71.5±1.2	4.06±0.25	2.76±0.33	1.04±0.36	0.26±0.04 (85±13)	69 : 25 ± 7
(b) Rats given 3.6 to 50 units of insulin and killed 1 to 2 hour later (peak of reaction)							
Normal	2.66±0.24	68.7±0.5	4.66±0.36	3.06±0.18	1.34±0.26	0.25±0.03 (91±8)	66 : 28 ± 5
Expl.	2.36±0.10	69.4±0.2	4.28±0.19	3.18±0.26	0.83±0.18	0.26±0.02 (103±2)	74 : 20 ± 4
(c) Rats injected intraperitoneally with Aspergillus and Sporothrix and killed 2 weeks later. Definite signs of infection in the liver and the intestine.							
Expl.	2.75±0.22	68.6±0.9	4.45±0.20	3.30±0.10	0.90±0.10	0.25±0.01 (— —)	74 : 20 ± 2

*Free as % of total cholesterol.

†Expressed as % of total lipid.

Bloor.² Total and free cholesterol were determined by the method of Okey³ as modified by Yasuda⁴ by precipitation and oxidation of the cholesterol as the digitonide. All experimental values are the averages of duplicate determinations. From the values obtained by the above procedures the further distribution of the liver lipids was found by calculation.

The fatty degeneration of the liver caused by chloroform is characterized by the microscopic appearance of globules of fat in the tissue. However, the results of analysis of the livers of white rats following severe chloroform injury, Table I(a), show that the total lipid content remains essentially normal, indicating that the appearance of globules of fat in the liver is due to a rendering visible of fat already present rather than an infiltration of fat from outside depots. The ratio of phospholipid to neutral fat was also found to be within the limits of that for normal liver tissue. Administration of large doses of insulin or fungus infection (*Aspergillus* and *Sporothrix*) likewise caused no significant changes in the amount and distribution of the liver lipids, Table I (b) and (c).

These results are at variance with those reported by Theis in that (1) the proportion of total lipid present as phospholipid in normal liver tissue is considerably higher than he found and (2) no displacement of the normal phospholipid: neutral fat balance takes place in the case of the white rat as the result of chloroform poisoning, insulin administration or fungus infection.

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Reactions of Immature Rabbit Ovary to Gonadotropic Extracts.

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The reactions of the prepubertal rabbit to gonad-stimulating extracts of anterior pituitary and of pregnancy urine have been extensively studied¹⁻³ but apparently no ovarian responses have been

² Bloor, W. R., *J. Biol. Chem.*, 1928, **77**, 53.

³ Okey, R., *J. Biol. Chem.*, 1930, **88**, 367.

⁴ Yasuda, M., *J. Biol. Chem.*, 1931, **92**, 303.

¹ Siegmund, H., *Arch. f. Gynäk.*, 1930, **142**, 702.

² Brindeau, A., Hinglais, H., and Hinglais, M., *Compt. rend. Soc. de Biol.*, 1932, **111**, 604.