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Lipids of the Thoracic Duct Lymph in Fasting.

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Rony, Mortimer and Ivy[1] reported that the thoracic duct lymph of dogs that had fasted 2 to 14 days contains 250 to 1300 mg. of total fatty acids per 100 cc. lymph with an average value for 60 dogs of 630 mg. %. The total cholesterol content of these lymphs varied from 41 to 114 mg. %.

This work was undertaken to obtain further characteristics of the lipids of thoracic duct lymph in fasting. The lipid phosphorus content, the iodine number and the saponification value of the lymph lipids were examined.

The dogs fasted 4 to 7 days; the thoracic duct was cannulated under intravenous pentobarbital anesthesia and from 20 to 50 cc. of lymph were collected. This lymph was analyzed for lipid phosphorus with the Kuttner-Lichtenstein method,[2] for iodine number with the Hanus method, and for saponification value. Table I gives the results thus obtained on 12 dogs.

TABLE I.
Lipids of Thoracic Duct Lymph in Fasting.

	Total Fatty Acids mg./100 cc.	Total Cholesterol mg./100 cc.	Lipid P mg./100 cc.	"Lecithin" mg./100 cc.	Iodine No.	Saponification Value	% Total Lipids not Saponifiable
Range	250 to 1300	41 to 114	3.86 to 6.27	96.5 to 156	73.7 to 89.25	129.6 to 137.1	30.5 to 33.8
Average	630	71	5.17	129.2	80.26	132.8	32.6

The values given in Table I for total fatty acids and total cholesterol are quoted from Rony, Mortimer and Ivy's paper. The values for "lecithin" are obtained by multiplying the lipid-P by 25. The saponification value represents the mg. KOH required to neutralize 1 gm. of the solids in the ether extract of lymph. The calcu-

[1] Rony, H. R., Mortimer, B., and Ivy, A. C., *J. Biol. Chem.*, 1932, **96**, 737; 1933, **102**, 161.

[2] Kuttner, Th., and Lichtenstein, L., *J. Biol. Chem.*, 1932, **95**, 661.

lation of the unsaponifiable portion of the lymph fat was made on the basis of the assumption that all lipids present are C18 fatty acids.

It is known that, in fasting, lipids are excreted by the intestinal mucosa into the lumen of the bowel (Bloor and Sperry, etc.). Rony, Mortimer and Ivy found that in fasting the thoracic duct lymph fat consists chiefly of this fat, the major portion of which is reabsorbed by the intestinal mucosa and passed into the lacteals and thoracic duct. In view of this it is of interest to compare our data listed above (Table I) with those obtained by Sperry on fecal lipids.[3]

a. Iodine number. Sperry found that the iodine number of the fecal fat of fasting dogs varied between 78.6 and 103 with an average value of 90.4. This is very similar but slightly higher than our figures on lymph fat, the value for lymph being 80.2.

b. Unsaponifiable portion. The fecal fat of dogs kept on a lipid-free diet contains 35 to 40% unsaponifiable lipids, according to Sperry. This compares favorably with our figures on thoracic duct lymph fat in fasting, namely, from 30.5 to 33.8% unsaponifiable substance.

No figures are available for the lipid P content of the fecal fat in fasting.

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Gastrectomy and Subsequent Hematologic Studies in the Hog.

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Blood studies in gastrectomized animals have been done in the dog[1] and in the rat.[2] The presence of substances effective in pernicious anemia in hog's liver and whole desiccated stomach made it seem worth while to study the effect of gastrectomy in the hog on hematopoiesis. We desire to report our preliminary observations during the past 7 months.

Five Poland China pigs 12½ weeks of age were selected. On the 24th of June, 1933, four of the pigs were gastrectomized by us in the Physiological Laboratory of the University of Wisconsin Med-

[3] Sperry, W. M., *J. Biol. Chem.*, 1924, **60**, 261; 1926, **68**, 357.

[1] Ivy, Morgan and Farrell, *Surg. Gynec. and Obst.*, 1931, **53**, 2.

[2] Jung, Maison and Highstone, *Proc. Inst. Med.*, Chicago, 1933, **9**, 389.