

serum pH; and, also, with the glucose results of Allison and his co-workers¹⁸ who found that the sugar content of non-septic synovial fluids was higher than in infected fluids. Working with sterile synovial fluids with high leucocyte counts Cajori and Pemberton¹⁹ found a high acidity and a low sugar content, but they accounted for this as probably the result of glycolysis. Therefore, the results obtained here indicate that these cyst fluids are sterile and that they do not contain leucocytes in sufficient number to produce glycolysis. Bacteriologically, all of these antrum cyst fluids were sterile by ordinary means of cultivation, which also accounts for the alkaline pH and the normal glucose values.

The above analytical findings, therefore, are analogous to those obtained by previous workers on fluids resulting from transudation from the blood, with the exception of the high protein content. This last semblance to inflammatory exudates may be explained by the increased permeability of the cyst membranes resulting from infection, bacterial products, and proliferative vascular reactions.

Results. Total water, protein, glucose, and electrolyte concentrations were determined on fluids obtained from the non-secreting type of benign cysts of the antrum. The means were as follows: Total water, 940.8, ± 0.6 g; protein, 60.3, ± 6.4 g; glucose, 980. ± 60 mg; pH, 7.65, ± 0.02 ; CO₂, 25.0, ± 1.8 mM; chloride, 100.5, ± 7.2 mM; sodium, 141.8, ± 3.1 mM; potassium, 4.5, ± 0.6 mM; calcium, 2.27, ± 0.12 mM; and magnesium, 0.89, ± 0.08 mM per liter of fluid.

13266

Effect of Digitonin on Solubility of Phospholipids.

H. D. McEWEN* AND P. L. MACLACHLAN. (Introduced by W. R. Bloor.)

From the Department of Biochemistry and Pharmacology, School of Medicine and Dentistry, University of Rochester, and Department of Biochemistry, School of Medicine, West Virginia University, Morgantown.

In the Bloor-Knudson procedure¹ for the determination of the cholesterol ester content of blood plasma, digitonin in alcoholic

¹⁸ Allison, N., Fremont-Smith, F., Dailey, M. E., and Kennard, M. H., *J. Bone and Joint Surg.*, 1926, **8**, 748.

¹⁹ Cajori, F. A., and Pemberton, R., *J. Biol. Chem.*, 1928, **76**, 471.

* Present address: School of Medical Sciences, University of South Dakota, Vermillion.

¹ Bloor, W. R., and Knudson, A., *J. Biol. Chem.*, 1916, **27**, 107.

solution is added to an alcohol-ether extract of plasma and the mixture evaporated to dryness, thus precipitating the free cholesterol as the digitonide. The cholesterol esters, and presumably the other lipids, are extracted with petroleum ether. However, it was observed by one of us² that when phospholipid determinations, by the Bloor oxidimetric procedure,³ were made on such petroleum ether extracts, no phospholipid was present (Table I). This was interpreted to mean that the phospholipid had been rendered quantitatively insoluble in petroleum ether as a result of the digitonin treatment.

Since blood plasma contains mixed phospholipids it was of interest to determine if lecithin and cephalin could be separately precipitated by digitonin. Experiments to test this were carried out as follows. A sample of mixed phospholipids was prepared from egg yolk from which samples of lecithin and cephalin were obtained by fractionation with absolute alcohol. Aliquots containing known amounts of mixed phospholipid, lecithin and cephalin in petroleum ether solution were evaporated to small volume in 50 cc Erlenmeyer flasks or 15 cc centrifuge tubes and taken up in alcohol. Digitonin in alcoholic solution was then added, carefully mixed, and evaporated to dryness on a steam bath. The residue was extracted with successive portions of petroleum ether and the combined extracts subjected to the Bloor oxidimetric method for phospholipid.

The results (Table I) show that the mixed phospholipid from egg yolk, as well as that in blood plasma, is rendered quantitatively insoluble in petroleum ether by the use of 2 cc of 0.5% digitonin in

TABLE I.
Data on the Precipitation of Phospholipid with Digitonin.

Sample	Amt used mg	Amt recovered %
Using 2 cc of 0.5% digitonin in 50% alcohol		
Mixed phospholipid (blood plasma)	2.08 (4) *	0
" " (egg yolk)	3.03 (2)	0
Lecithin (egg yolk)	2.94 (2)	0
	2.65 (4)	0
Cephalin (egg yolk)	4.18 (2)	31.2
		28.5
Using 5 cc of 0.2% digitonin in 95% alcohol		
Cephalin (egg yolk)	4.18	1.5
	2.09 (2)	0
" and lecithin (egg yolk)	2.09 }	0
	1.96 }	

*Figures in parentheses = number of samples.

² McEwen, H. D., Thesis, University of Rochester, 1935.

³ Bloor, W. R., *J. Biol. Chem.*, 1929, **82**, 273.

50% alcohol. Lecithin prepared from egg yolk behaves similarly. Although cephalin is completely precipitated when present in mixed phospholipid it is not completely precipitated by this treatment when alone. However, by the use of 5 cc of 0.2% digitonin in 95% alcohol complete precipitation of cephalin was obtained whether alone or when mixed with lecithin.

Summary. It has been shown that mixed phospholipid from blood plasma or egg yolk is rendered quantitatively insoluble in petroleum ether by the use of digitonin. Lecithin and cephalin obtained from egg yolk behave in a similar manner.

13267 P

Effect of Scopolamine on the Fetus.*

ROBERT DREISBACH AND FRANKLIN F. SNYDER.

*From the Departments of Pharmacology and of Obstetrics and Gynecology,
University of Chicago, Chicago, Ill.*

The influence of scopolamine on the fetus and on the course of labor is of considerable interest in view of the widespread clinical use of the drug during labor. The clinical observations have been obscured by the simultaneous use of scopolamine with other drugs such as morphine and barbiturates, as well as by numerous complications of labor such as mechanical trauma, anoxemia, and anesthesia. The present experiments represent an attempt to control conditions so that the effect of scopolamine alone may be studied apart from complicating factors.

Cats were selected for study because it was found by trial that cats and dogs react to scopolamine much more readily than rabbits, guinea pigs, and rats.

The effect of scopolamine on the fetus was determined in cats by direct observation of the fetuses following exposure of the uterus by laparotomy carried out beneath the surface of a bath of Ringer's solution at 37°C. Section of the spinal cord in the lumbar region permitted operation without general anesthesia. Several fetuses of a litter were permitted to escape into the bath through incisions of the uterine wall, the umbilical circulation remaining intact. The re-

* Aided by a grant from the Dr. Wallace C. and Clara A. Abbott Memorial Fund of the University of Chicago.