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Concentration of Sulfanilamide in Human Bile.

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In view of the difficulty in introducing effective bactericidal drugs into the gallbladder we studied this problem by examining human gallbladder bile for its contents of sulfanilamide, following oral administration of this drug. For this purpose in 11 patients who were about to be operated upon for gallstones, sulfanilamide was given before operation and specimens of the bile and blood taken at operation in cases of cholecystectomy. Sulfanilamide was administered in individual doses of 15 grains, with the addition of sodium bicarbonate. The sulfanilamide content of blood and bile were determined by Marshall's method for blood and a slight modification of this method for bile.[1] In those patients in whom the common duct was drained common duct bile was taken.

We found in every case that the sulfanilamide could be detected in the bile. In 3 out of 4 cases (Nos. 1-4) in which the Graham Cole test had shown good concentration of the dye in the gallbladder before operation, the concentration of sulfanilamide in the gallbladder bile was higher than in the blood, and in 2 out of 3 cases (Nos. 5-7) in which the Graham Cole test had indicated poor concentration, the sulfanilamide concentration in the bile was lower than in the blood. In the 4 cases in which common duct bile was used the results are variable (Nos. 8-11). In patient No. 10 repeated determinations of sulfanilamide in liver bile (common duct drainage) and blood showed that below a concentration of 4.2 mg % of the drug in the blood, none appeared in the bile.

Summary. This series of 11 cases shows us that sulfanilamide is excreted in the bile and that it may be concentrated considerably in the gallbladder. Further work is being done to see whether or not on account of the concentration of sulfanilamide in the gallbladder this drug might be of therapeutic value in the case of infected gallbladder.

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[1] Marshall, E. K., Jr., PROC. SOC. EXP. BIOL. AND MED., 1937, **36**, 422; *J. Biol. Chem.*, 1937, **122**, 267.

TABLE I.
Concentration of Sulfanilamide in Human Bile.

Case No.	Sex	Age	Graham Cole Test	Surgical and pathological findings	Sulfanilamide				
					Administered		Concentration mg%		
					No. of days	Total dose grains	In bladder bile	In duct bile	In blood
1	M	42	Good concentration. Single stone.	Cholecystitis and stone	2	90	2.5		1.3
2	F	50	Good concentration. Single stone	Cholecystitis and stone	2	90	Trace		3.1
3	F	46	Good concentration. Stones.	Cholecystitis and stones	2	105	10.1		2.3
4	F	53	Good concentration.	Single stone in gall bladder Marked cholecystitis	3	135	5.8		3.7
5	F	50	Poor concentration. Single stone.	Cholecystitis and stone in gallbladder and cystic duct	2	60	2.4		5.7
6	F	35	Poor, if any concentration.	Thick inspissated bile, many stones	2	90	Trace		1.7
7	F	54	Poor concentration. Stones.	Adhesions, cholecystitis, and stones	2	90	6.6		2.4
8	M	51		Common duct stone. Drainage of common duct.	1	15		+	Trace
9	M	61		Common duct stone Drainage of common duct.	1	60		+	+
10	F	40	No concentration.	Common duct stone Drainage of common duct.	2	100		++	6.4
11	F	58	" "	Common duct stone Drainage of common duct. (Old cholecystectomy.)	2	75		5.7	3.5