tested for sterility, and injected into a dog. When no reaction was observed in the animal, 40 cc of the same solution (4 g of protein) was injected intravenously into a patient. There was no apparent reaction.

When serum was used in 500-700 cc portions, some difficulty was encountered in the preparation of dried serum proteins due to denaturation of the proteins. The cause of the denaturation is probably the difficulty of stirring the larger amount of precipitating fluid adequately, as well as difficulties in filtration. If filtration is not accomplished very rapidly, the alcohol in the precipitating fluid tends to become warm enough to denature the serum proteins. These difficulties have not yet been entirely overcome.

Summary. The method devised by Hartley for the preparation of dry and lipid-free immune sera has been adapted to the preparation of dried serum proteins in quantity. In spite of some technical difficulties, the serum proteins prepared by this method have been injected into dogs and into a single human subject without serious reactions.

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Resistance of Human Spermatozoa *in vitro* to Sulfanilamide and Sulfapyridine.

LANDRUM B. SHETTLES* (Introduced by N. J. Eastman)

From the Department of Obstetrics, The Johns Hopkins University and Hospital.

Jaubert and Motz[1] studied the effect of sulfanilamide on spermatogenesis in 23 men suffering from gonorrhea. They noted a reduction in both the number and vitality of the spermatozoa, with their complete immobilization in some instances. Marion, Barbellion, and Torres,[2] observed that small oral doses of sulfanilamide caused a decrease in the number and motility, and an increase in the abnormal forms, in the spermatozoa of 69% of their patients. Vigoni[3] found the same changes in men treated by urethral irrigation with sulfanilamide, 2 of his patients actually developing azoospermia.

* Fellow, National Committee on Maternal Health.

1 Jaubert, A., and Motz, C., *Presse méd.*, 1938, **46**, 237.

2 Marion, Barbellion and Torres, *Bull. Soc. fran. d'urol.*, May 16, 1938.

3 Vigoni, M., *J. Belge d'urol.*, 1938, **11**, 375.

On the other hand, Heckel and Hori[4] found no noteworthy effects on spermatogenesis in 11 normal patients given sulfanilamide. Levaditi and Vaisman[5], as well as Palazzoli, Nitti, Bonet, and Levinson,[6] observed little effect from sulfanilamide on spermatogenesis in experiments with mice, rats and rabbits.

Since all of the work referred to was carried out *in vivo,* and as far as the author is aware, no experiments have been made on the *in vitro* effect of sulfanilamide on spermatozoa, the following studies were conducted on the effect of sulfanilamide and sulfapyridine as well.

Materials and Methods: The seminal specimens studied in these experiments were of varying freshness. They were furnished by 20 donors ranging from 17 to 51 years. Approximately 0.01 ml of semen was thoroughly mixed with 1 ml of Baker's[7] fluid† containing either sulfanilamide or sulfapyridine in concentrations of 5 to 160 mg %; the specimens thus mixed were kept both at 22°C (approximately) and body temperature. Control tests were conducted with the same amount of semen in Baker's fluid alone, also kept at the 2 temperatures. Sulfanilamide and sulfapyridine were also added to 1 ml of undiluted semen in a number of experiments, in an amount sufficient to give maximum concentration at the respective temperatures, undiluted semen alone being used as a control. Observations were made at frequent intervals, particularly toward the end of an experiment, so that the time of cessation of all movement could be accurately ascertained. Depression slides were used and while observations were not being made, they were kept in closed petri dishes, to prevent evaporation. The results obtained are presented in Tables I, II.

Results: The tables demonstrate no correlation between the age of the donor and the length of survival of the spermatozoa. There was marked individual variation in the duration of motility among different specimens, but the average time of survival at room temperature (9.4 hours) was considerably longer than at body temperature (3.5 hours). It can also be seen that the survival time of spermatozoa in various concentrations of sulfanilamide and sul-

4 Heckel, N. J., and Hori, C. G., *Am. J. Med. Sci.*, 1939, **198**, 347.

5 Levaditi, C., and Vaisman, A., *Compt. rend. Soc. de biol.*, 1938, **128**, 352.

6 Palazzoli, M., Nitti, F., Bonet, D., and Levinson, M., *Compt. rend. Soc. de biol.*, 1938, **128**, 261.

7 Baker, J. R., *J. Hyg.*, 1931, **31**, 309.

† The composition of Baker's fluid is as follows: water, 1000 ml; glucose, 30.9 g; $Na_2HPO_4 \cdot 12\ H_2O$, 6.0 g; NaCl, 2.0 g; KH_2PO_4, 0.1 g.

TABLE I.

Resistance of Human Spermatozoa to Sulfanilamide and Sulfapyridine *in Vitro* at Room Temperature.

Age of sperm at beginning of exp, hr	Age of donor, yr	Conc. of sulfanilamide, mg% — Survival time, hr						Conc. of sulfapyridine, mg% — Survival time, hr						Survival time of control, hr
		5	10	20	40	80	160	5	10	20	40	80	160	
0.50	48	13.0			11.5		12.0		12.3		12.5			12.3
0.50	29	14.0	13.5	14.5		14.0			15.0			14.7	14.3	14.5
0.75	29	3.2		3.0	3.3			3.0		3.0			2.7	3.0
1.00	22	16.0	16.0	16.5				17.0			15.5			16.0
2.00	18	12.4					14.0	13.0				13.0		13.8
2.00	17	4.0		3.9				4.0				3.5		4.0
3.00	41			10.0			8.8					9.3	8.2	9.0
6.00	30	8.0	8.0	8.0	8.5	7.0	6.5	7.6	6.5	7.0	7.0	7.2		7.5
11.00	27				8.0			8.0			7.5			8.0
12.00	51		6.0		6.5			7.0					6.3	6.3

TABLE II.

Resistance of Human Spermatozoa to Sulfanilamide and Sulfapyridine *in Vitro* at 37.5°C.

Age of sperm at beginning of exp, hr	Age of donor, yr	Conc. of Sulfanilamide, mg% — Survival time, hr						Conc. of sulfapyridine, mg% — Survival time, hr						Survival time of control, hr
		5	10	20	40	80	160	5	10	20	40	80	160	
0.75	23		2.0		2.2	1.9			2.0		2.0	2.2		2.1
1.00	22		5.5			5.0	5.6		5.4		6.0		5.5	5.5
1.00	35				3.7		4.0				4.0		4.0	4.0
2.00	48			3.5		3.5				3.6		3.1		3.5
2.25	30			3.5			3.5			3.7			3.4	3.5
3.50	18	4.5		4.3			4.7	4.6		4.7			4.6	4.6
4.00	25		6.2				6.0		6.1			6.5		6.4
5.00	46	3.0		3.0		3.0	3.2		3.3			2.8		3.1
8.00	21	1.0	1.0	1.2			1.0	.75	1.25	1.0			1.0	1.3
10.00	29	0.5			0.5		0.5	0.5			0.5		0.6	0.5

fapyridine at both room and body temperatures was essentially the same as that of the respective controls. Neither the age of the specimen nor donor altered either susceptibility or resistance to these drugs. The results were equally negative if the sulfanilamide and sulfapyridine were added to Baker's solution plus semen or to undiluted semen.

Since an *in vitro* concentration of as much as 160 mg % was used, these results gain added significance when it is recalled that the maximum tissue fluid concentration of sulfanilamide achieved clinically is about 15 mg % and that of sulfapyridine about 10 mg %.

Summary: *In vitro* concentrations of sulfanilamide and sulfapyridine well above the tissue concentration achieved by therapeutic doses, do not affect the survival or activity of human spermatozoa.

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A New *Salmonella* Type Isolated from Apparently Normal Hogs.*

P. R. EDWARDS, D. W. BRUNER AND H. L. RUBIN

From the Department of Animal Pathology, Kentucky Agricultural Experiment Station, and Department of Bacteriology, University of Kentucky, Lexington, Ky.

In a study of the mesenteric lymph glands of apparently normal hogs in Uruguay, Hormaeche and Salsamendi[1] isolated numerous *Salmonella* types. In a repetition of this work Rubin[2] found that *Salmonella* strains could be isolated frequently from the mesenteric lymph glands of apparently normal hogs slaughtered at an abattoir in Kentucky. The purpose of the present paper is to describe a hitherto unrecognized *Salmonella* type encountered in these hogs. The organism is designated as *Salmonella lexington.*

Methods—Two mesenteric lymph glands were removed from each hog after the internal organs had been inspected. Lymph glands from 25 hogs were placed in a sterile container, taken to the labora-

* The investigation reported in this paper is in connection with a project of the Kentucky Agricultural Experiment Station and is published by permission of the Director.

1 Hormaeche, E., and Salsamendi, R., *Arch. Urug. Med., Cir. y Espec.*, 1939, **14**, 375.

2 Rubin, H. L., unpublished data.