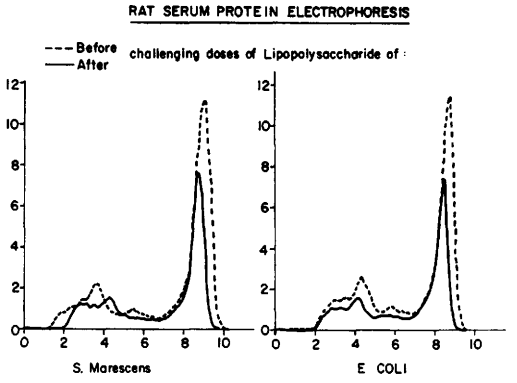

FIG. 1

placental hemorrhages, varying in size from 1 to 5 mm, with nuclear changes in the endothelial lining of decidual and placental venous sinuses. The nuclei showed a crenated membrane with folding and an abnormal density. Some of the fetuses were edematous but no specific lesion was found on sectioning and staining with H. and E.

Discussion. The present experiments confirm the difficulties encountered in attempting to immunize cows against *B. abortus* Bang (2) to prevent abortions. The findings suggest that the toxic factor of the LS is Lipoid A, which is not antigenic but is carried in the larger molecule of the LS.

Summary. Groups of rats immunized with doses of LS of *E. coli* or *S. marcescens* from g.d. 1 to 7 or 7 to 13, and then injected with a single dosis of LS otherwise lethal to the litters, showed 15% to 43% of fetuses surviving. The serum protein of the experimental animals showed the presence of a globulin antibody which was much reduced within 6 hours after the challenging dosis of LS. Sufficient circulating antibodies against the LS, however, were present 6 hours after the challenging dosis was given, demonstrated by agglutinated and hemolyzed sensitized red cells in dilutions of 1:8500.

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Effect of Lipoid A of the Lipopolysaccharide (LS) of *E. coli* on the Rat Litter *in utero.** (27229)

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It was shown(1) that the LS of gram neg. microorganism given parenterally to pregnant rats after implantation would destroy the litters *in utero*. According to Westphal(2) the toxicity of LS depends on the amount of Lipoid A in the molecule of the LS. It was, therefore, of interest to compare the effect of the extracted lipoid from the LS without the carrier molecule with the effect of the original LS on the rat litter *in utero*. The material, supplied by Westphal, consisted of LS *E. coli* CO111-3116-S4, and Lipoid A-11 preparation CO111-L2, 10 mg/ml in 0.5% dextran methiolate 1:10,000. Toxicity: The single LD_{50} for the LS was 20 mg/kg and for the Lipoid A more than 200 mg/kg. The methods used were identical with those described previously(1).

Experiments. The first group of pregnant rats were injected i.p. with 2 mg/kg of LS on the 12th gestation day (g.d.), the second group with 2 mg/kg of Lipoid A-11, and the third and fourth group with 20 mg/kg on the 12th g.d. The results are listed in Table I. All litters treated with 2 mg/kg of the LS died. The 2 mg/kg of the Lipoid A had only a stunting effect, but did not destroy a single litter. Four per cent of all fetuses were resorbed which is the upper normal limit. Group 3 and Group 4 treated with 20 mg/kg

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TABLE I. 1* Lipopolysaccharide of *E. coli*; 2,*3 Lipoid A of *E. coli*.

No. of rats	Compound	Day of dose	Dose, mg/kg		Mother's wt gain	Uteri total implants	Fetuses			Surv. plac.	Mothers with all res. litters	Litter wt	Fetus	
							Live	d Stunted	Resorbed				Wt	Length
12	1*	12	2	a		124			124		12			
				b	+ 5.0	10.3			10.3					
				c					100		100			
13	2*	"	2	a		121	116	5	6	5				
				b	+41.4	9.3	8.9					45.9	5.1	3.8
				c			96	4.3	4	83.3				
14	2*	"	20	a		145	15		130	101	11			
				b	+14.9	10.3	1.07		9.2	7.2		25.0	5.0	3.8
				c			10.3		89.7	78	78.5			
14	3*	"	20	a		120	10	8	120	96	11			
				b	+16.8	9.3	.7			6.5		11.6	3.5	3.5
				c			7.7	80	92.4	80	78.5			

a, total; b, per mother; c, % of total; d, % of live.

of Lipoid A had litters with surviving fetuses in 3 rats each, indicating that the Lipoid A was less than 10 times effective in litter destruction than the LS. This corresponded to the toxicity findings of the single LD_{50}.

Summary. The single LD_{50} of the LS of *E. coli* III was 20 mg/kg. The LD_{50} of the Lipoid A extracted from the LS was more than 200 mg/kg. The isolated Lipoid A in a single 20 mg/kg dosis on the 12th g.d. destroyed most litters of pregnant rats and was less effective than the single 2 mg/kg doses of the LS. The findings confirm Westphal's contention that the Lipoid A is the toxic factor in the LS. Lipoid A appears approximately 10 times more effective on the embryo when carried by the large LS molecule than when given in the isolated form.

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