

At $P_H+7.0$, the minimum generation time at 36.0°C . — 37.0°C ., is 31 minutes. Maximum growth begins on the average after five hours incubation.

At $P_H+7.8$, the minimum generation time is 33.4 minutes. The maximum rate of growth is reached by the eighth or ninth hour.

At $P_H+5.4$ the minimum generation time is 41.3 minutes. The maximum rate of growth is reached after $9\frac{3}{4}$ hours.

85 (1460)

The pathogenicity of bacterium melitensis for guinea pigs.

By K. F. MEYER, E. C. FLEISCHNER and E. B. SHAW.

[From the George Williams Hooper Foundation for Medical Research, University of California Medical School, San Francisco.]

The very close relationship of *B. abortus* (Bang) to *B. melitensis* demonstrated by A. C. Evans¹ has been confirmed by our observations. Experimental studies, to be published in the near future, have furnished two additional characteristics of similarity.

1. The guinea pigs infected with *B. abortus* developed striking reactions of cutaneous hypersensitiveness with melitensis-protein, and vice versa in animals successfully infected with *B. melitensis* skin reactions are obtained with aborto-protein (see Table I.).

2. In a series of attempts to infect guinea pigs with various known strains of *B. melitensis* obtained from the Hygienic Laboratory, U. S. Public Health Service (same strains as studied by Miss Evans), we finally succeeded in producing by intratesticular injection of 1/10 agar slant (48 hours' growth on peptic digest agar) a disease with pathological changes which could not be distinguished from those seen in about one hundred guinea pigs suffering from abortion disease. The lesions of two guinea pigs, which consisted of a very large spleen, general lymphadenopathy, liver and lung lesions with infiltrations of epithelioid cells and lymphocytes were only definitely diagnosed to be the result of a *B. melitensis* infection by cross agglutination and absorption

¹ A. C. Evans, *J. Infec. Diseases*, 1918, xxii., 580.

TABLE I.

W.	Mode of Infection	Cutaneous Hypersensitiveness.				Time Interval, Days.	Cutaneous Hypersensitiveness.				Time Interval, Days.	Cutaneous Hypersensitiveness.				Day on which sacrificed.	Autopsy Findings.	Bacteriologic Results.	Agglutination Test.
		Melitensis Protein, Cm.	Aborto Protein, Cm.	Bronchisepticus Protein, Cm.	Typho Protein, Cm.		Melitensis Protein, Cm.	Aborto Protein, Cm.	Paratypho Protein, Cm.	Typho Protein, Cm.		Melitensis Protein, Cm.	Aborto Protein, Cm.	Paratypho Protein, Cm.	Typho Protein, Cm.				
528	1/10 slant of <i>B. abortus</i> 320 and 317 interperitoneally.	2.0 X R.I.R.	1.5 X R.I.R.	0.5 X 0.5	0.5 X 0.5	55	2.0 X R.I.R.	1.5 X R.I.R.	0.5 X 0.5	0.5 X 0.5	88	NP	NP	NP	121	Emaciation, atrophy of testes; abscess in r. epididymis; typical abortion disease.	Pus from abscess; <i>B. abortus</i> .		
489	1/10 slant of <i>B. abortus</i> 320 and 317 interperitoneally.	1.3 X 1.3 R.I.R.	1.7 X 1.7 R.I.R.	0.6 X 0.6	0.5 X 0.5	—	—	—	—	—	—	—	—	63	Abortion disease; spleen 5 X 2.6; involvement of r. metatarsophalangeal joint.	Spleen culture: <i>B. abortus</i> .			
481	1/10 slant of polyvalent <i>B. melitensis</i> (1, 2, 3, 4) I.P.	0.6 X 0.6	0.7 X 0.7	0.6 X 0.6	0.7 X 0.7	55	0.6 X 0.6	0.7 X 0.7	0.6 X 0.6	0.7 X 0.7	88	0.8 X 0.8	0.6 X 0.6	0.8 X 0.8	107	Negative.	Negative.		
550	1/10 slant of polyvalent <i>B. melitensis</i> (1, 2, 3, 4) I.P.	0.9 X 0.9 R.	1.0 X 1.0 R.	0.4 X 0.4	0.5 X 0.5	55	0.9 X 0.9 R.	1.0 X 1.0 R.	0.4 X 0.4	0.5 X 0.5	—	—	—	63	Negative.	Negative.			
442	1/10 slant of polyvalent <i>B. melitensis</i> (1, 2, 3, 4) I.P.	0.6 X 0.6	0.5 X 0.5	0.5 X 0.5	0.5 X 0.5	55	0.6 X 0.6	0.5 X 0.5	0.5 X 0.5	0.5 X 0.5	—	—	—	—	Reserved for further tests.	—	—		

Wt.	Mode of Infection.	Cutaneous Hypersensitiveness.				Time Interval, Days.	Cutaneous Hypersensitiveness.				Time Interval.	Cutaneous Hypersensitiveness.				Day on which sacrificed.	Autopsy Findings.	Bacteriologic Results.	Agglutination Test.	
		Melitensis Protein, Cm.	Aborto Protein, Cm.	Bronchisepticus Protein, Cm.	Typho Protein, Cm.		Melitensis Protein, Cm.	Aborto Protein, Cm.	Paratypho Protein, Cm.	Typho Protein, Cm.		Melitensis Protein, Cm.	Aborto Protein, Cm.	Paratypho Protein, Cm.	Typho Protein, Cm.				<i>B. abortus.</i>	<i>B. melitensis.</i>
495	1/10 slant of polyvalent <i>B. melitensis</i> (1, 2, 3, 4) I.P.	0.8 X 0.8	0.9 X 0.9	0.6 X 0.6	0.6 X 0.6	55	0.4 X 0.4	0.4 X 0.4	0.8 X 0.8	0.8 X 0.8	88	0.4 X 0.4	0.4 X 0.4	0.8 X 0.8	133	Negative.	Negative.			
590	1/10 slant of <i>B. melitensis</i> intratesticularly.	—	—	—	—	—	—	—	—	—	—	—	—	—	10D	Lymphadenitis, abscess in r. testis; spleen enlarged.	Cultures from testis and spleen positive for <i>B. melitensis</i> .			
558	1/10 slant of <i>B. melitensis</i> intratesticularly.	1.9 X 1.9 R.I.	1.1 X 1.1 R.I.	0.6 X 0.6 C.N.	0.5 X 0.5 C.N.	55	—	—	—	—	—	—	—	63	General lymphadenitis; spleen enlarged 4.5 X 2.5; surface nodular; liver foci. Striking resemblance to abortion disease.	Spleen and liver cultures positive for <i>B. melitensis</i> .				
815	1/10 slant of <i>B. melitensis</i> intratesticularly.	0.6 X 0.6	0.6 X 0.6	0.4 X 0.4	1.0 X 1.0	25	0.9 X 0.9	0.8 X 0.8	NP	NP	52	0.9 X 0.9	0.8 X 0.8	62	Negative.	Negative.				

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			Melitensis Protein, Cm.	Aborto Protein, Cm.	Bronchiticus Protein, Cm.	Typho Protein, Cm.		Melitensis Protein, Cm.	Aborto Protein, Cm.	Para-typho Protein, Cm.	Typho Protein, Cm.				<i>B. abortus.</i>	<i>B. melitensis.</i>
833	1/10 slant of <i>B. melitensis</i> intratesticular.	25	1.1 X 1.1 I.R.	0.7 X 0.7	0.7 X 0.7	0.5 X 0.5	52	2.0 X 2.0 R.I.R.	1.6 X 1.5 R.I.R.	0.4 X 0.4	NP	57D	Spleen and liver only positive.	1 : 60-80	1 : 100-200	
712	1/10 slant of <i>B. melitensis</i> intratesticular.	25	1.5 X 1.5 R.I.R.	1.2 X 1.2 R.I.R.	0.8 X 0.9	1.0 X 1.0	52	1.5 X 1.5 C.N.	1.6 X 1.6 C.N.	0.7 X 0.7	0.7 X 0.7	62	Lymphadenitis; numerous foci in liver and spleen; I. testis atrophic; abscess in epididymis; purulent seminal vesiculitis.	1 : 200-800	1 : 1000-2000	
590	1/10 slant of <i>B. melitensis</i> intratesticular.	25	0.4 X 0.4	0.9 X 0.9 R.I.R.	0.4 X 0.4	0.7 X 0.7	52	1.6 X 1.4 R.I.R.	1.5 X 1.5 R.I.R.	NP	NP	62	Pelvic lymphadenitis; I. testis atrophic; purulent seminal vesiculitis.	1 : 400	1 : 400-1000	
477	1/10 slant of <i>B. melitensis</i> intratesticular.	25	0.8 X 0.8 R.I.	1.1 X 1.1 R.I.	0.6 X 0.6	0.6 X 0.6	52	0.6 X 0.6	1.0 X 1.0	NP	NP	62	Mediastinal lymph-node enlarged; other organs negative.	1 : 100-1 : 200	1 : 400-1 : 800	
445	1/10 slant of <i>B. melitensis</i> intratesticular.	25	1.2 X 1.2 R.I.R.	1.2 X 1.2 R.I.R.	0.8 X 0.8	0.8 X 0.8	—	—	—	—	—	38	Spleen 3.5 X 2.0; general lymphadenitis; I. testis atrophic; liver and lung foci with epithelioid cells.	1 : 100	1 : 800	

tests with the recovered bacteria. The observations thus far completed are summarized in Table I. For comparison, the records of two guinea pigs successfully infected with the *B. abortus*, and four animals unsuccessfully inoculated intraperitoneally with *B. melitensis* are included.

Experiments with *B. melitensis* strains obtained from Algiers and with the *B. paramelitensis* (Nègre and Raynaud) are in progress.