THE PATHOGENICITY OF TANGANYIKA STRAINS OF
BRUCELLA ABORTUS AND BR. MELITENSI S FOR A
LOCAL SPECIES OF MONKEY (CERCOPITHECUS SP.)

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VARIOUS writers (Burnet, 1928; Burnet and Conseil, 1929; Vercellara, 1929;
Huddleson and Hallman, 1929; Meyer and Eddie, 1929, 1930; and Weigmann,
1931) using strains of Brucella abortus, have shown that this species is very
slightly pathogenic for certain species of monkeys, while Br. melitensis pos-
sesses a high degree of virulence for the same animal. I have conducted a
few experiments with a view to confirming these results, using a bovine abortus
and a human melitensis strain isolated in Tanganyika.

HISTORY OF LOCAL STRAINS

The abortus strain was freshly isolated from the stomach contents of an
aborted calf. It reacted as a typical bovine abortus when submitted to the
following methods of typing:

(1) H₂S production.
(2) Reaction to monospecific sera.
(3) Dye sensitivity.

It may be mentioned that it required no increased CO₂ tension for primary
isolation.

The melitensis strain was recently isolated from a case of human Brucel-
losis. It reacted as a typical melitensis as regards H₂S production, reaction
to monospecific sera and dye sensitivity.

RESULTS

Four monkeys were inoculated with the bovine abortus strain and four
with the melitensis strain, and examined after a period of 32 days for evidence
of infection by the following methods:

The monkeys were chloroformed and killed. Cultures on liver agar were
made from the heart blood, spleen smear and liver smear. The blood serum
in each case was tested for the presence of agglutinins to bovine abortus and
human melitensis.

I. The following monkeys were inoculated with the bovine abortus strain:

Monkey No. 2 received 4000 million organisms subcutaneously.

Result negative. The monkey remained fit, all cultures were negative and
no agglutinins were produced.
Brucella Infection Experiments on Monkeys

**Monkey No. 8** received 7000 million organisms intravenously.  
*Result* negative. The monkey remained fit, all cultures were negative and no agglutinins were produced.

**Monkey No. 4** received 2000 million organisms intraperitoneally.  
*Result* negative. The monkey remained fit, all cultures were negative and no agglutinins were produced.

**Monkey No. 9** received the enormous dose of 10,500 million organisms subcutaneously.  
*Result.* Although the monkey remained fit, all cultures were positive and agglutinins were present in a titre of 1/50. Burnet and Conseil (1929) reported similar cultural results in two monkeys inoculated with enormous doses of bovine *abortus*, but they failed to find agglutinins in the serum.

II. The following monkeys were inoculated with the human *melitensis* strain:

**Monkey No. 11** received 3000 million organisms subcutaneously.  
*Result.* The monkey became ill and lost all interest in its surroundings; all cultures were positive and agglutinins were present in a titre of 1 : 250.

**Monkey No. 12** received 4000 million organisms intravenously.  
*Result.* Five days later the monkey was extremely ill, could not jump and sat in a corner of his cage in a comatose condition. The next day the monkey was chloroformed. All cultures were positive, and although the infection was only 6 days old its serum agglutinated the *melitensis* strain in a titre of 1 : 12-5. Compare the severe symptoms exhibited by this monkey with that of monkey No. 8 which received nearly double the dose of bovine *abortus* intravenously.

**Monkey No. 13** received 4000 million organisms subcutaneously.  
*Result.* The monkey became ill and debilitated, all cultures were positive and its serum agglutinated the *melitensis* strain in a titre of 1 : 250.

**Monkey No. 14** received 4000 million organisms intraperitoneally.  
*Result.* The monkey became ill, all cultures were positive and its serum agglutinated the *melitensis* strain in a titre of 1 : 125.

**Conclusions and Discussion**

Although only four monkeys were inoculated with each strain, the results are so conclusive that it would appear that a Tanganyika strain of bovine *abortus* is little if at all pathogenic for a local species of monkey, while a human *melitensis* strain proved virulent for other animals of the same species.

Monkey No. 9, which received an enormous dose of *abortus* organisms, did show the presence of agglutinins and positive cultures after a 32 days’ infection. This would appear to indicate that this species of monkey was capable of resisting comparatively small doses of organisms but could not completely
dispose of large infective doses in a period of 32 days. The organism also in large doses exhibited very little antigenic property in the monkey as agglutinins were only present in an end titre of 1:50. It may be added that Burke-Gaffney (1935) reported a case of laboratory infection with bovine abortus in a laboratory worker in Tanganyika. The latter was engaged in investigating the same strain of Br. abortus as that described above in connection with the monkey experiment, and from which investigation the infection was presumed to have been contracted.

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REFERENCES


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