# THE PATHOGENICITY OF TANGANYIKA STRAINS OF *BRUCELLA ABORTUS* AND *BR. MELITENSIS* FOR A LOCAL SPECIES OF MONKEY (*CERCOPITHICUS* 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* possesses 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) $H_2S$ production.
(2) Reaction to monospecific sera.
(3) Dye sensitivity.

It may be mentioned that it required no increased $CO_2$ tension for primary isolation.

The *melitensis* strain was recently isolated from a case of human Brucellosis. It reacted as a typical *melitensis* as regards $H_2S$ 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.

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*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 comatosed 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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