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# *SOME STUDIES ON BRUCELLOSIS IN CAMELS*

*(With One Table)*

*By*

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## دراسات عن مرض البروسيـــلا في الجمال

عبدالمنعم سالم ، سميره الجبالى ، محمد عـزت شوكـــت ، سامـى إسماعيل إبراهيم ، أحمد ندا

تم فى هذا البحث فحص ٧٨٠ جمل سيرولوجياً بإستخدام إختبارات التلبد الأنبوبـى ، تثبيت المكمل ، الميركابتوا يثانول وإختبار الروزبنجال وكانت النتائج كما يلى : ـــ فـــى إختبار التلبد الأنبوبى كانت عدد عينات الجمال المتفاعلة ١٦٦ (٢١ر٢٨٪) عند إستخـــدام الفينول سلاين ، ١٨٠ (٢٣ر٠٨٪) عند إستخدام الفينول ٥٪ ص كل و ١٦٦ (٢١ر٢٨٪) عنـــد إستخدام درجة حرارة ٥٠ مم · فى إختبار تثبيت المكمل كانت الجمال المتفاعلة ١٠٩(١٣ر٩٧٪ وفى إختبار الميركابتو ايثانول كانت ١٠٥ (١٣ر٤٦٪) · أما فى إختبار الروزبنجـــال كانـت الحيوانات المتفاعلة ٦٤ (٨ر٢٪) · وقد حدثت ظاهرة البروزون فى العديد من عينات الســير المتفاعلة فى إختبار التلبد الأنبوبى عند إستخدام محلوب الفينول سلاين ، وقد تم التغلب عليها بإستخدام محلول الفينول ٥٪ ص كل · كما تم فى هذا البحث فحص عدد ٤١ عينـة من أنسجـة جمال ذبحت بالمجزر لعزل ميكروب البروسيلا منها ولكن لم تنجح محاولة عزل الميكـروب مـــن أى منهـــا ·

## *SUMMARY*

In this study, 780 camels were subjected to different serodiagnostic tests for brucellosis. These tests include tube agglutination, complement fixation, mercaptoethanol and Rose Bengal plate tests. In tube agglutination test, the reactor camels were 166(21.28%) when using phenolized physiological saline, 180(23.08%) when using 5% phenolized NaCl solution and 166 (21.28%) when using phenol saline at 50°C. In complement fixation test, positive reactor camels were 109(13.97%) and in mercaptoethanol test were 105(13.46%). In Rose Bengal plate test, the positive reactor camels were 64(8.2%). Prozone phenomenon, in tube agglutination test, was evident in many reacted sera when using phenolized physiological saline. This phenomenon could be overcome by using 5% phenolized NaCl solution. Bacteriological examination of tissue specimens from 41 camels slaughtered at abattoirs for Brucella isolation failed to isolate Brucella organisms.

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## INTRODUCTION

Camels in several countries, including Egypt are still an important source of meat, milk and hair, in addition to their use for riding and carrying agricultural products in villages. Camels are infected by several diseases of which brucellosis is of great importance as reported by AHMED (1939); ZAKI (1984); HAMADA et al. (1963); EL-NAHAS (1964); AYOUB et al. (1973) and FAYED et al. (1982).

**The aim of this study was to investigate:**

- The rate of Brucella infection among camels by using different serological tests.
- Determination of the most satisfactory test or test for routine diagnosis.
- Trial for isolation and typing of Brucella organisms affecting camels in Egypt.

## MATERIALS and METHODS

**Materials :**

Blood samples from 780 camels from different localities were collected.

Tissue specimens from 41 camels slaughtered in Imbaba abattoir were collected for bacteriological examination. These specimens include supramammary, supreinguinal lymph nodes, parts of udder, spleen and liver tissues.

Standardized Brucella abortus agglutination antigen for tube agglutination test was obtained from the Veterinary Research Laboratory in Abbasia, Cairo, Egypt.

Antigens for Rose Bengal test, complement fixation test as well as complement, haemolysin and Veronal buffer were obtained from BioMerieux Institute, France.

Mercaptoethanol was obtained from Merk Laboratories, Germany.

**Methods :**

A) Serodiagnostic tests:

The techniques used for these tests were those described by:

- ALTON and JONES (1967) for both tube agglutination test (when use phenol saline and phenolized 5% NaCl solution) and complement fixation test.
- STAUGARD (1975) for tube agglutination test (when using phenol saline but incubation in water bath was at 50°C).

ALTON et al. (1975) for Mercaptoethanol test.

- MORGAN et al. (1969) for Rose Bengal plate test.

B) Bacteriological examination:

It was done according to the methods described by ALTON et al. (1975).

## RESULTS

The results are shown in Table (1).

**Table (1):** Results of different serological tests for brucellosis on 780 camels.

| Test | | Blood serum titres | | | | | | | | Total No. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/10 | 1/20 | 1/40 | 1/80 | 1/160 | 1/320 | 1/640 | 1/1280 | of reactors |
| TAT "using phenol saline" | No. | 62 | 42 | 20 | 14 | 16 | 7 | 4 | 1 | 166 |
| | % | 7.95 | 5.30 | 2.56 | 1.79 | 2.05 | 0.9 | 0.51 | 0.13 | 21.28 |
| TAT "using phenolised 5% NaCl" | No. | 62 | 47 | 31 | 18 | 9 | 8 | 4 | 1 | 180 |
| | % | 6.03 | 3.97 | 2.31 | 1.15 | 1.03 | 0.51 | 0.51 | 0.13 | 23.28 |
| TAT "using phenol saline at 50°C | No. | 31 | 45 | 34 | 28 | 12 | 11 | 3 | 2 | 166 |
| | % | 3.97 | 5.77 | 4.36 | 3.59 | 1.54 | 1.41 | 0.38 | 0.26 | 12.28 |
| CFT | No. | 8 | 14 | 36 | 22 | 20 | 5 | 4 | 0 | 109 |
| | % | 1.03 | 1.79 | 4.62 | 2.82 | 2.56 | 0.64 | 0.51 | 0 | 13.97 |
| MET | No. | 31 | 21 | 19 | 16 | 12 | 2 | 3 | 1 | 105 |
| | % | 3.97 | 2.69 | 2.44 | 2.05 | 10.54 | 0.26 | 0.38 | 0.13 | 13.46 |
| RBPT | No. | | | | | | | | | 64 |
| | % | | | | | | | | | 8.21 |

TAT = Tube agglutination test. CFT = Complement fixation test.
MET = Mercaptoethanol test. RBPT= Rose Bengal plate test.

## DISCUSSION

A wide range of diagnostic procedures for brucellosis for many species of animals are available, but in camels such methods are still in need to further studies. As the results of these diagnostic tests are affected by numerous factors and vary from one species to another too (SALEM et al., 1976); thus should be interpreted in view of test sensitivity and specificity under regional conditions to determine the most sensitive and highly specific test or tests for being adopted for routine use in Egypt.

As demonstrated in Table 1, application of tube agglutination test (TAT) using phenolized 5% NaCl solution showed the highest percentage of reactors (23.08%) and overcome the prozone phenomenon which was noticed when physiological phenol saline was used. This can be attributed to the molecular size of Brucella antibodies in camels. These results are supported by STABLEFORTH and GALLAWAY (1959) and ALTON and JONES (1967). The results of TAT, when using phenol saline at 37°C and at 50°C were the same (21.28%), although the blood sera of camels positively reacted at lower titres, ehen the test was performed at 37°C and at a higher titres, ehen performed at 50°C. This may be due to the effect of temperature as reported by STUGARD (1975).

The percentage of reactors was 13.97% in complement fixation test and 13.46% in Mercaptoethanol test (MET), which are quite similar. This can be attributed to the activity of IgG in both tests as reported by MORGAN et al. (1969).

The Rose Bengal plate test (RBPT) showed the lowest percentage of reactors (8.21%). This may be due to the fact that it reacts only with the $IgG_1$ due to the acidic pH of Rose Bengal antigen which inhibits the IgM (CORBEL, 1971 and SHAWKAT, 1973).

The obtained data indicated that more than one test should be applied for efficient diagnosis of brucellosis in camels; one of which must be the TAT using phenolized 5% NaCl solution and the other test must be either CFT, RBPT or the MET.

The high percentage of positively reacted camels for brucellosis is of at most importance to pay the attention for examination of camels and organizing a control program for brucellosis on a national scheme.

In this study, a trial to isolate Brucella organisms from tissue specimens of 41 slaughtered camels was done but failed. This increases the need for further attempts for the isolation of Brucella organisms from the positively reactor camels, as in this study, random samples were only used.

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