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حساسية بعض الطرق التشخيصية لمرض البروسيلا في الأبقار

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أجريت هذه الدراسة بغرض تشخيص مرض البروسيلا وتقييم بعض الاختبارات السيرولوجية بكتريولوجيا (على أساس نسبة العزل) وذلك على ١٤٠ بقرة من مزارع موبوءة بمرض البروسيلا

أوضحت نتائج العزل لميكروب البروسيلا أن هناك حالة كان تخفيف الأجسام التلبدية ١٠:١ وهناك حالة أخرى ليس بها أجسام تلبدية ومع ذلك تفرز الميكروب في اللبن ٠

أثبتت نتائج البحث أن نسبة التوافق بين الاختبارات السيرولوجية المستخدمة ونسبة العزل كانت ٩ر٧٨٪ لاختبار التلبد الأنبوبي، ٤٧ر٨٩٪ لاختبار الروزبنجال ٦٨٠ر٧٣٪ لاختبار الريفانول ، ٧٣ر٩٤٪ لاختبار تثبيت المكمل ، ٢ر٨٤٪ لاختبار التلبد الحلقي فى اللبن ٠

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SENSITIVITY OF SOME DIAGNOSTIC PROCEDURES FOR BRUCELIOSIS IN CATTLE

(With Two Tables)

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SUMMARY

The present study was carried out to evaluate some serological tests for brucellosis based on the rate of Brucella isolation on 140 cows from herds suffering from brucellosis.

Results of bacteriological examination revealed that although some cows whose blood serum was negative or showed 1:10 titres in the agglutination reaction, yet these cows secreted Brucella organisms with their milk.

Correlation between different serodiagnostic tests and the rate of Brucella isolation in this study, were 78.9%, 89.47%, 94.73%, 84.2% for TAT, RBT, Rivanol test, CFT and MRT respectively.

INTRODUCTION

Brucellosis in Egypt and in many other countries is still a serious problem due to its zoonotic and economic importance. Different serological tests for diagnosis of brucellosis are still unable to detect all animals incubating the disease, or chronically infected cases, as well as animals which are often irregular in their response to serological tests, MORGAN, et al. (1969) and DAVIES (1971)

Evaluation of the serodiagnostic tests varies from one country to another, therefore, it was of importance to evaluate some diagnostic procedures for brucellosis in cattle in Egypt, based on the rate of Brucella isolation in natually infected herds.

MATERIAL and METHODS

Blood serum and milk samples as well as, milk from the last streaks of the 4 quarters, were collected from 140 cows from herds suffering from brucellosis for serological, MRT and bacteriological examinations.

Antigen for tube aggultination (TAT) supplied by Vet. Research Laboratories, Abbasia, Cairo, Egypt.

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Antigen for Rose Bengal test (RBT), milk ring test (MRT) and complement fixation test (CFT) as well as complement (lyoph.), Haemolysin, Veronal buffer and brucella control serum were those of Merieux Institute (France).

- Antigen for Rivanol test, as well as Rivanol solution were obtained from United states Department of Agriculture, Animal and Plant Health Inspection Service (USA).

Brucella albimi agar for isolation of Brucella organisms were obtained from CHAS pfizer, USA.

- Sheep red blood corpuscles, were collected from healthy brucellosis free male sheep of about 6 moth age.
- TAT, MRT, CFT as well as bacteriological examination of milk for Brucella isolation were carried out according to ALTON and JONES (1967).
- RBT was done according to MORGAN, et al. (1969).
- Rivanol test was carried out according to National Vet. Service Laboratories, Ames Iowa, U.S.A. (1984).

RESULTS

The results of serological investigation and the rate of Brucella isolation are summarized in Tables (1 and 2).

DISCUSSION

No reliance can be placed on the results of a single negative test for brucellosis, MORGAN, et al. (1969). Therefore, different serological tests must be used for detection of animals in different stages of brucellosis.

In the present study, evaluation of the different serological tests as shown in Tables (1 & 2) revealed that CFT gave the highest correlation (94.7%) with the rate of Brucella isolation. This may be attributed to the higher sensitivity and specificity of this test in picking up infected cases, as reported by NICOLETTI (1969) and ALTON, et al. (1975).

Using the TAT in this study detected a higher number of reactors as compared with the RBT and Rivanol test. This may be due to the higher sensitivity of this test to 1gM than to 1gG as explained by ALTON, et al. (1976). Moreover, lower titre of agglutinin 1/10 (20 I.U.) or even negative agglutination reaction (cases No. 4 & 12) do not exclude active infection of cows by brucellosis.

Although, the reaction of RBT and Rivanol test depend upon the 1gG antibodies, yet Rivanol test detected lower number of reactors than that of RBT. This may be attributed to the serum dilution in Rivanol test, or variation in the sensitivity of both tests or other factors which need further investigation.

Using the MRT in this study, resulted in 84.2% correlation with the rate of Brucella isolation. This indicates the higher sensitivity and reliability of this test as reported by FERGUSON and ROBERTSON (1954). This refers to the importance of this test for individual cows in lactating herds as compared with other serodiagnostic tests.

DIAGNOSTIC PROCEDURES

The results of this study indicates that no test could identify all cows excreting Brucella organisms in their milk (Table 2). CFT is still the superior one among the employed tests. Therefore, it is important to use more than one test of which the CFT must be one of them for accuracy diagnosis of brucellosis infected animals.

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Table (1)

Results of serological and bacteriological examinations for brucellosis on 140 cows

No. of examined cows	TAT Reactors at 1/10 & higher	RBT reactors	Rivanol reactors	CFT reactors 1/5 and higher	MRT reactors	Total No. of Burcella isolat
140	17 12.1%	17 12.1%	14 10.0%	18 12.8%	16 11.4%	19 13.57%

Table (2)

Correlation between different serological tests and the rate of Brucella isolation

Serial No. of Animals	TAT titer	RBT	Rivanol test at 1/25 and higher	CFT	MRT	Brucella Isolation
1	1/40	+	-	+	++	+
2	1/180	+	+	+	+++	+
3	1/40	+	+	+	++	+
4	1/10	+	-	+	-	+
5	1/160	+	+	+	++	+
6	1/160	+	+	+	++	+
7	1/80	+	+	+	+++	+
8	1/320	+	+	+	++++	+
9	1/40	+	+	+	+++	+
10	1/80	+	+	+	+++	+
11	1/40	+	+	+	++	+
12	-	-	-	+	--	+
13	1/80	+	+	+	++	+
14	1/20	+	-	+	++	+
15	-	-	-	-	--	+
16	1/80	+	+	+	++	+
17	1/320	+	+	+	++++	+
18	1/80	+	+	+	+++	+
19	1/40	+	+	+	++	+
Efficacy	89.47%	89.47%	73.68%	94.73%	84.2%	