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PREVALENCE OF BRUCELLA ABORTUS ANTIBODIES IN CATTLE IN NORTHERN JORDAN (With 3 Tables)

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إستبيان الأجسام المناعية المضادة لمرض البروسيلا
في الماشية في شمال الأردن

مأثب نظمي السخون

جمعت ٤٥٣ عينة دم من الأبقار في شمال الأردن . وقد تم فحصها للتحرر عن وجود الأجسام المضادة لبروسيلا الإجهاض وذلك باستخدام تجربة التلازن بالانتيروب (SAT) وتجربة تثبيت المكمل (CFT) . ودلت نتائج التجربة الأولى أن ١٨ (٤٪) عينة كانت موجبة وأن ١٢ (٩٪) أخرى كانت مشكوك فيها . أما نتائج التجربة الثانية فدللت على أن ٨ (١٫٧٪) عينة كانت موجبة . إن أعلى عيار في تجربة التلازن كان ٨:١ . وفي تجربة تثبيت المكمل كان ١:٤٠ . وقد بينت النتائج المتوفرة من هذه الدراسة تدل على أن نسبة حدوث مرض البروسيلا في الأبقار هو ٤٫٦٪ ، وأن الحيوانات الموجبة هي مؤشر قوي على وجود بؤر مؤثرة في إنتشار الخمج بين القطعان المختلفة في شمال الأردن .

SUMMARY

453 cattle blood samples were collected from northern Jordan. They were examined for *Brucella abortus* antibodies by application of the tube agglutination test (SAT) and the complement fixation test (CFT). In SAT, 18(4%) samples were seropositive and 43(9.5%) were doubtful, while in CFT 8(1.7%) samples were seropositive. The highest titre recorded in SAT was 1:80 and in CFT was 1:40. The obtained results indicate a 4.6% incidence of brucellosis among cattle. The positive reactors are strong evidences of the presence of a potent foci responsible for spreading the infection among herds in northern Jordan.

INTRODUCTION

Bovine brucellosis is a world-wide infection and an important cause of infertility in cattle and other animal species HASMIM, *et al.* (1987); STUART and CORBEL (1987); MEDOR and DEYOE (1986); ABU DAMIR, *et al.* (1984). Although serious vaccination and eradication programmes had been and being practiced, brucellosis still a major problem in animal breeding as well as an important zoonotic disease in many countries HASHIM, *et al.* (1987); BORNAREL, *et al.* (1987); SALMAN and MEYER (1987); SUTHERLAND and MACKENZIE (1983); ENRIGHT and HUGH-JONES (1984). Various serological tests are

utilized for determination the status of the infected, vaccinated and nonvaccinated herds. Due to its high sensitivity and specificity, the CFT is frequently applied, especially in combination with another test(s), for surveying and eradication purposes HUBER and NICOLETTI (1986); MATHIAS and PINTO (1983); SUTHERLAND and MACKENZIE (1983).

In Jordan, abortion and mastitis are two big animal problems. On the other side, diagnosis of brucellosis depends, in most instances, on the clinical symptoms. This work looks at surveying the *Brucella abortus* antibodies among cattle in northern Jordan which inhabit 58.5% of cattle population (Ministry of Agriculture, HKJ (1984).

MATERIAL and METHODS

453 cattle blood samples were collected randomly from Irbid, slaughter house, as well as from different scattered farms in northern Jordan. The sera were separated and then inactivated at 56°C for 30 minutes. The *Brucella* antigen (Robert von Ostertag Institut, Berlin); the guinea pig complement and the antish sheep RBCs haemolysin 1:4000 (Behring Werke A.G., Germany) were used in this study. The sera were examined for the presence of *Brucella abortus* antibodies utilizing the tube agglutination test (SAT) and the complement fixation test (CFT) according to the procedures described elsewhere (Bruce. Verord. 6/73/BGBl, I.S. 1046). Titration of the complement by using known positive serum was done in every setting up of the CFT. However, Known positive and negative sera were also used as control in every performance of the tests.

The results of the SAT were determined as positive when there is 50% (++) or more clearances of the supernatant in 1:40 or higher titres, otherwise, they were recorded doubtful; and as negative when no any clearance was observed. On the other side, positivity of the CFT was determined when a 50% (++) or 75% (+++) or 100% (++++ inhibition of haemolysis in 1:5 or higher titre was occurred.

RESULTS

Table (1) reveals that out of a total of 101(22.2%) samples showing reactions in SAT, 18(4%) were seropositive. 17 of them had a 1:40 titre and only one a 1:80 titre. On the other side, a total of 43(9.5%) samples were doubtful. Their details revealed that 27 and 7 samples had a 1:20 titre and display a 50% (++) and a 75% (+++) clearances, respectively, while the rest 9 samples had a higher 1:40 titre, but showed a weak 25% (+) reaction.

Table (2) shows that in CFT 8 (1.76%) samples are seropositive. Out of 5 of them having a titre of 1:40, 4 samples show a (++) and only one sample a (+++) inhibitions. The rest 3 samples show a (++) reaction and titres of 1:5 and 1:10 in one and two specimens, respectively.

Table (3) displays a comparison of the results where only 5 samples show positive reactions in both tests. Indeed, 3 samples of them have the same titre 1:40, while the other two samples have a higher titre in SAT.

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DISCUSSION

Jordan, as many countries, suffers from brucellosis either in man or animals. Lack of information about the disease in this country, participates in abberation of its picture. Therefore, it is not surprising, in every some year(s), to face a brucellosis outbreak in a certain area (s), as it was occurred among sheep and goats in 1985-86. In such a situation, the diagnosis, especially in the veterinary services, depends mostly on the clinical symptoms and eventually on some preliminary laboratory testings.

The obtained results in both utilized tests reveal that a sum of 21 out of 453 examined samples are seropositive which represent an overall incidence of 4.6%. They originate from different locations covering a wide sector of the northern Jordan (Table 3). These findings indicate evidently that such reactors should belong to or had been in contact with infected herds. Indeed, two seropositive animals have a history of abortion an additional one was an imported cow (Table 3) which may constitute an infectious impact for the animal populations. On the other hand, in Jordan, the introducing of carriers into herds as important factor in spreading of brucellosis (HAFEZ, 1986), as an unfortunate possibility since neither effectual quarantine and movement restrictions nor surveying, vaccination and eradication measures are effeciently practiced. This is exceptionally significant in a country like Jordan because many of the farmers import heifers from various sources for raising purposes.

Brucellosis can be consered to represent an important impact among cattle in northern Jordan, and the seropositive cases as well as the eventually affected animals in some other locations in this country, can be considered as potential foci in spreading of the infection which, accordingly, need more effectual control measures.

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Table (1)
Numbers and endtitres of reactors in SAT

Titre:	1:10	1:20	1:40	1:80	1:160	No.	%
	+					40	8.8
		++				27	6.0
		+++				7	1.5
			+			9	2.0
			++			11	2.4
			+++			6	1.3
				++		1	0.2
					+	00	0.0
Total						101	22.2

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Table (2)

Numbers and endtitres of seropositive samples in CFT

Titre:	1:5	1:10	1:20	1:40	1:80	No.	%
	++					1	0.22
		++				2	0.44
			+			0	0.00
				++		4	0.88
				+++		1	0.22
					+	0	0.00
Total						8	1.76

Table (3)

History of the in CFT seropositive animals in comparison with their SAT results

Location	History*	CFT		SAT	
		Titre	Reaction	Titre	Reaction
Sarih	Cow, 4y.old, healthy	1:5	++	-	-
Hawar	Cow, 3y.old, healthy	1:10	++	1:20	+++
Irbid	Cow, 3y.old, healthy	1:10	++	1:20	+++
Irbid	Cow, 5y.old, abort, 8M ago	1:40	++	-	-
Irbid	Cow, 4.5.old, imported before IOM.	1:40	++	1:40	++
Katham	Cow, 6y.old, abort. 9M ago	1:40	++	1:40	++
Jamha	Cow, 4.5y old, healthy	1:40	++	-	-
Fo'arah	Bull, 2.5y old, healthy	1:40	+++	1:40	++

* Y : Year

M : Month