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**EFFECT OF PRETREATMENT WITH LONG ACTING  
OXYTETRACYCLIN ON EXPERIMENTAL INFECTION WITH  
BRUCELLA ABORTUS IN RABBITS (PRELIMINARY STUDY)**  
(With 2 Tables)

By

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تأثير المعالجة المسبقة بعقار التتراسيكلين طويل المفعول  
على الإصابة التجريبية للارانب بهروسيلا الأبقار

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أجرى هذا البحث على عدد ٨ أرانب تم تقسيمهم الى مجموعتين متساويتين أ، ب . تم حقن أرانب المجموع أ بعقار التتراسيكلين طويل المفعول ٢٠ مجم /ك جم من وزن الحيوان في العضل وبعد ٦ ساعات تم حقن أرانب المجموع أ ، المجموع ب بميكروب البروسيلا أبورتس النوع الثالث ٩٠×١ تحت الجلد . تم حقن أرانب المجموع أ بعقار التتراسيكلين بنفس المعدل بعد ٤٨ ، ٩٦ ساعة من اعطاء الجرعة الأولى للعقار . بعد ثلاثة وستة أسابيع من العدوى تم أخذ عينات دم من هذه الحيوانات وأجرى عليها اختبارى التبلد الشريحي وتثبيت المكمل . أظهرت الاختبارات وجود الاجسام المناعية الخاصة بمرض البروسيلا في أرانب المجموع ب بينما كانت المجموع أ خالية من هذه الاجسام المناعية . بعد ستة أسابيع من العدوى ، تم ذبح هذه الحيوانات وفحص بعض الأعضاء الداخلية وبعض الغدد الليمفاوية بكتريولوجيا حيث أظهرت النتائج عزل ٩ عترات نفس ميكروب هروسيلا أبورتس من أرانب المجموع ب بينما لم يتم عزل الميكروب من أرانب المجموع أ حيث ثبت خلوها من ميكروب البروسيلا . وتؤكد هذه النتائج فعالية ونجاح عقار التتراسيكلين طويل المفعول في منع حدوث العدوى بميكروب البروسيلا في الأرانب

**SUMMARY**

This study was carried out to investigate the effect of long acting oxytetracyclin (OTC) on experimental brucella infection in rabbits. Eight brucellosis free rabbits, divided into two equal groups (A and B) were employed. Rabbits in group "A" were intramuscularly injected with 20 mg/Kg, B.W. of long acting OTC. After 6 hours, all the 8 rabbits were exposed to infection by *Brucella abortus* biotype 3 by subcutaneous inoculation of 0.1 ml of brucella suspension containing  $1 \times 10^5$  cells of 2 days-old smooth culture. Rabbits in group "A" were reinjected with the same dose of long acting OTC after 48 and 96 hours from the first injection of long acting OTC. Sera were collected from these animals after 3 and 6 weeks post-inoculation and tested by the plate agglutination test (PAT) and complement fixation test (CFT). *Brucella* agglutinins

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and complement fixins were detected only in sera of group "B" rabbits, but not in those of group "A". Bacteriological examination of sacrificed rabbits 6 weeks post-infection, yielded the same *Brucella abortus* strain from all rabbits of group "B", while no *Brucella* organisms were recovered from all rabbits of group "A".

## INTRODUCTION

Treatment of *Brucella* infected animals to minimize the spread of infection and elimination of carriers, specially when there is no possibility to eradicate the infected cases, has been recommended by several authors (FENSTERBANK, 1976; LOWARD *et al.*, 1984 and NICOLETTI, *et al.*, 1985) who reported that OTC could eliminate *Brucella* organisms from udder secretion and selected tissues at post-mortum in some infected animals. FENSTERBANK (1975) suggested that injection of 10 gms of OTC would prevent the spread of infection among contact animals and might stop the storm of abortion in early brucella infection. Therefore the aim of this work was to investigate the effect of long acting OTC on brucella infection as a preliminary trial for prevention of *Brucella* infection.

## MATERIAL and METHODS

### Material :

Laboratory Animals: Eight brucellosis-free (serologically negative by PAT) rabbits, weighing about 2 Kg, each were kept in separate cage.

Antigen for PAT was obtained from the Department of Agriculture, Animal Plant Health Inspection Services, USA.

Antigen for CFT was obtained from Merieux Institute, France.

Media: *Brucella* albimi agar for isolation of *Brucella* organisms, was obtained from CHAS, Pfizer, Anco Co. Inc. N.Y. USA.

Monospecific sera: monospecific anti *Brucella abortus* and anti *Brucella melitensis* sera for identification and typing of *Brucella* organisms were obtained for welcome Research Lab. Beckenham England.

*Brucella abortus* biotype 3 was locally isolated by the author from milk of *Brucella* infected cow.

Long acting oxytetracyclin (OTC) was obtained from Pfizer Company, Egypt.

### Methods :

Plate agglutination test (PAT) was carried out according to the method described by National Veterinary Research Laboratories, Ames Iowa (1984).

Complement fixation test (CFT) was carried out according to ALTON and JONES (1976).

Isolation and identification of *Brucella* organisms from liver, spleen, lung, heart, kidneys as well as mesenteric, and pulmonary lymph nodes of sacrificed rabbits were carried out according to the method described by ALTON *et al.* 1975).



## DISCUSSION

Serological examination of rabbits 3 and 6 weeks post infection revealed the presence of agglutinins and complement fixins in the blood of the control untreated rabbits, while rabbits of the treated group were negative. This may be attributed to the antibacterial activity of long acting OTC against *Brucella* organisms which resulted in disappearance of the *Brucella* organisms. This result is in accordance with that obtained by TRAN DINH TU (1982) who attributed the immunosuppressive effect of OTC on serum agglutinins and complement fixins to the inhibition of bacterial growth.

Bacteriological examination of different organs from sacrificed rabbits (liver, spleen, lungs, heart, kidney as well as mesenteric, hepatic and pulmonary lymph nodes) 6 weeks post infection, resulted in isolation of 9 *Brucella* strains from group "B" rabbits (control), but could not be recovered from any rabbit of group "A". This can be attributed to the antibacterial action of long acting OTC. This result coincides with that of NICOLETTI *et al.* (1985) who recorded clearance of *Brucella* infection in some infected cows treated with long acting OCT. The effectiveness of long acting OTC in prevention of infection in these experimental animals is due to the antibacterial activity of the drug, its long action as well as its power of penetration into tissues, where *Brucella* organisms are located. This result indicated the importance of further studies on this drug as well as other therapeutics for the treatment and prevention of *Brucella* infection. Moreover, this investigation increases the hope in future to minimize the rate of abortion or to eliminate carriers in areas where there is no possibility to eradicate the infected cases, specially in animals whose products are not used for human consumption and there is no possibility to compensate the owners.

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## OXYTETRACYCLIN, BRUCELLA ABORTUS

## RESULTS

Table (1): PAT and CFT on sera of rabbits inoculated with Brucella abortus, 3 and 6 weeks post-inoculation.

Weeks Post-inoculation	Group (A)		Group (B)	
	PAT	CFT	PAT **	GFT *
3	-ve	-ve	1/50	1/10
6	-ve	-ve	1/200	1/40

-ve = no antibodies could be detected.

\*\* results expressed as the mean titre of the test.

Table (2): Bacteriological examination of rabbits sacrificed at 6 weeks post-infection with Brucella abortus.

Group	Animal No.	Liver	Spleen	Lung R L	Heart	Kidney R L	Mesenteric L.N.	Hepatic L.N.	Pulmonary L.N.	No. of isolates
(A)	1	-	-	- -	-	- -	-	-	-	-
	2	-	-	- -	-	- -	-	-	-	-
	3	-	-	- -	-	- -	-	-	-	-
	4	Died on the 5 <sup>th</sup> week.							Total ---	0
(B)	1	-	+	- -	-	- -	+	-	-	2
	2	+	+	- -	-	- -	-	-	-	2
	3	+	+	- -	-	- -	-	-	-	2
	4	+	+	- -	-	- -	+	-	-	3
									Total ---	9

- no brucella could be isolated.

+ Brucella Abortus could be isolated and identified.