

STUDIES ON CALVES SALMONELLOSIS

1. INCIDENCE OF SALMONELLA SEROTYPE IN CALVES

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SUMMARY

With a view to determine the prevalence of salmonellosis in calves in Baghdad, a systematic survey was conducted, involving calves herds located in two different regions of Baghdad. This study, though limited, revealed that the overall incidence of salmonellosis was 29.01 % (33.33 % in white Gold herd and 24.30% in AL-Futhalia herd).

This study also revealed that out of 57 isocates, 14 different serotype was obtained. Of these, S. dublin and S. typhimurium were the commonest serotype isolated from calves (26.32 % and 17.54 % respectively).

INTRODUCTION

Bovine salmonellosis is an economically important disease caused by a number of different species of Salmonella. The morbidity rate in outbreaks of salmonellosis in calves is usually high, often reaching 50 percent or more, while the mortality rate is high, reaching 100 percent in some outbreaks. On individual farms death losses due to this disease may be serious and the animals that recover from the acute form are usually chronically debilitated and require a long period of convalescence. It is common for some infected individuals who excrete the organism to remain clinically normal and this "carrier" condition may persist for months or years in several species of domesticated animals (1) The disease has a public health importance because salmonellosis is one of the commonest diseases in man, and its principal reservoir is domestic animals (2). In recent years the importance of salmonellosis in calves has been well recognized in Iraq. Calves suffering from a

clinical Salmonella infection may give rise to outbreaks of food poisoning if they are slaughtered and the meat used for consumption (3) The findings of which may help in the formulation of the future plans for the prevention of the disease.

Accordingly, the present study was conducted to:

- (i) carry out a systematic survey to determine the prevalence of salmonellosis in calves in Baghdad area;
- (ii) determine the serotypes of different Salmonella pathogens.

MATERIALS AND METHODS

Samples :

Two to three grams of faecal samples were taken from diarrhoeic calves in two dairy farms around Baghdad area, 193 (white gold and Al-Futhalia). Immediately after collection, the faecal samples were taken to the laboratory for bacterial isolation .

Cultural Examination

This was done according to the technique described by Gitter et al. (4), as follows :(i) A standard loopful of faecae was inoculated on Desoxycholate-Citrate Agar (oxid) (DCA) and Brilliant-green phenol-red A gar (oxid) (BGA). (ii) one gram of faeces was placed in each of two test tubes each with 20 ml selenite F broth (oxid) and two test tubes of tetrathionate broth (oxid). One selenite and one tetrathionate broth culture were incubated at 37 c and the other two at 43 c .Subcultures from the four enrichment broth were carried out after 24 and 48 hours incubation on DCA and BGA, which were incubated at 37 °C. The isolates were identified on the basis of their cultural characteristics and biochemical activities (2). The serotypes were determined by Central Public Health Laboratory, Baghdad.

RESULTS

RESULTS

In order to determine the incidence of salmonellosis in calves, a total of 193 calves, 108 calves in white Gold village and 85 calves in Al-Futhalia herds were examined for the presence of salmonellosis. The results are presented in table 1. Out of 108 calves examined at White Gold village 36 calves were found to have salmonellosis, the incidence being 33.33 %. Amongst the 85 calves of Al-Futhalia herd examined, 21 calves were having the microorganism. The incidence was 24.30 %. Taking into consideration all 193 calves examined during this study the incidence of salmonellosis in calves was found to be 29.01 %.

DISCUSSION

This study was carried out to determine the incidence of salmonellosis in calves of two different large private herds around Baghdad. It revealed that overall incidence of salmonellosis was 29.01% (33.33% in White-Gold herd and 24.30% in Al-Futhalia herd). The data available on serotype of different Salmonella species isolated from diarrhoeic calves revealed that S. dublin and S. typhimurium were the commonest serotype isolated from calves (26.32% and 17.54% respectively).

These observations are in agreement with those reported by Edel (5) who recorded that S. typhimurium and S. dublin were the most important serotypes isolated from calves in Holland during the period 1969-1971. Similarly, linton et al, (6) noticed that the dominant serotype was S. dublin followed by S. typhimurium during examination of four large calfrearing units over a three year period (1969-1972). In Belgium, Pohl et al (7) isolated 631 strains of Salmonella during 1979, and found that out of these 282 were isolated from diseased animals, mostly S. typhimurium and S. dublin from fattening calves. However, the present figures of rate of salmonellosis in calves are higher as compared to the reports of Harold and Denis (8) which revealed that morbidity and mortality rates amongst 85 exposed calves

were 50.6% and 25.9% respectively, during an outbreak of Salmonellosis in large dairy calf rearing unit.

These findings, however, differ from those of Richardson (9) who reported an outbreak of Salmonellosis caused by serotype other than S. dublin and S. typhimurium in 41 farms in north-west England. Richardson also found that calves in only three dairy herds were infected with S. havana, S. anatum, S. othmarches. Jones et al (1983) (10) found that an outbreak of Salmonellosis due to S. saint Paul in two dairy herds reached 100% amongst calves.

In Iraq, the incidence of Salmonellosis in cattle in comparison to calves appears to be low. Faraj et al (11) who found the incidence of Salmonellosis in cattle that carries Salmonella in their faeces was 15%. While Jatil (12) revealed that 12 of cattle examined before slaughtering were carrier. In spite of the importance of Salmonellosis infection in calves in Iraq, no real attempt was undertaken to determine the incidence of the disease in these animals. This study revealed a total of 14 different were obtained from the calves examined. This study is a progress to determine the incidence of Salmonellosis in other areas of Iraq.

Table 1: Incidence of Salmonellosis in calves

Herd	No. of calves examined	No. of calves affected	Incidence Rate
White-Gold (Private)	108	36	33.33
Al-Futhalia (Private)	85	21	24.70
Total	193	57	29.01

The serotypes of Salmonella isolated are shown in Table 2. Out of 57 isolates, 15 (26.32 %) were S. dublin, 10 (17.54%) were S. typhimurium, 7(12.28%) were each for S. anatum and S. havana, 5(8.77 %) were S. kentucky, 3(5.26 %) were S. molade, 2(3.51%) were each for S. albania, S. braenderup and S. alford, 1(1.75 %) each for S. emek. S. typhimurium var copenhagen, S. amsterdam and S. infantis.

Table 2: Serotype of different Salmonella species isolated from diarrhoeic calves

Species	Antigenic Composition	Serotype Group	Number strain isolated	%
<u>S. dublin</u>	1,9,12: 9,P:-	D1	15	26.32
<u>S. typhimurium</u>	1,4,5,12: i:1,2	B	10	17.54
<u>S. anatum</u>	30,10:e,h:1,6	E1	7	12.28
<u>S. havana</u>	1.13,23:	G2	7	12.28
<u>S. kentucky</u>	8,20:i:26	G3	5	8.77
<u>S. molade</u>	8,20:z10 z0	C3	3	5.26
<u>S. albania</u>	8,20:z4,z24	C3	2	3.51
<u>S. braenderup</u>	6,7,h:e,n,z.5	C1	2	3.51
<u>S. alford</u>	3,10:f,g:e,m,x	E1	2	3.51
<u>S. emek</u>	8,20:g,m,s:-	C3	1	1.76
<u>S. typhimurium</u> var <u>copenhagen</u>	1,4,12:i:1,2	B	1	1.75
<u>S. amsterdam</u>	3,10:i:1,5	E1	1	1.75
<u>S. infantis</u>	6,7:r:1,5	C1	1	1.75

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دراسات عن مرض السالمونيلا في العجول

١- إصابة العجول بالانواع المصلية لمرض السالمونيلا

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الخلاصة

متمت هذه الدراسة لغرض معرفة بعض جوانب مرض السالمونيلا في العجول في محافظة بغداد ولغرض ايجاد مدى نسبة حدوث/انتشار المرض في العجول. فلقد تم اختيار منطقتين مختلفتين لتجمع الحيوانات في محافظة بغداد. لوحظ أن نسبة حدوث الإصابة بمرض السالمونيلا في العجول كانت ٢٩,١% (٢٣٣/٢٣) في قرية الذهب الأبيض و ٢٤,٢% في قرية الغضيلية).

أوضحت نتائج الدراسة أيضا الى انه من خلال عزل (٥٧) جرثومة سالمونيلا، كانت (١٤) نمط مختلف تم الحصول عليه، كما كانت سالمونيلا دبلن وسالمونيلا تايفيموريوم من أكثر الأنماط شيوعا في العجول (٢٦٣/٢٦% و ١٧٥/١٧% على التوالي).