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**SERO-SURVEILLANCE OF BOVINE RESPIRATORY
SYNCYTIAL VIRUS (BRSV) IN DAIRY CATTLE
IN RIYADH**
(With 2 Tables)

By

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استقصاء مصلى لفيروس التضخم التنفسي البقري
في أبقار الحليب في الرياض
منصور هاشم عبد الباقي ، دخيل بن محمد المجلي

يعتبر فيروس التضخم التنفسي البقري المسبب الرئيسي لأوبئة لإلتهابات الأنسجة الضامة بين الشعب الرئوية الحادة في صغار العجول والأبقار الناشئة والبالغة. تم إجراء الاستقصاء المصلى لفيروس التضخم التنفسي البقري في ثمانية قطعان مزارع البان وأربعة قطعان تقليدية في منطقة الرياض خلال عام ١٩٩٨م وذلك باستخدام اختبار الأليزا القياسي. وقد أثبتت النتائج وجود نسب إيجابية للأجسام المناعية النوعية للفيروس بمتوسط قيمته ٧٨% في عدد ٤٤٩ عينة مصل شملت الدراسة من دون ارتباطها بوجود مشكلات تنفسية إكلينيكية في قطعان تلك الأبقار.

SUMMARY

Bovine respiratory syncytial virus (BRSV) defined as a major cause of outbreaks of acute viral interstitial pneumonia in young calves, yearling and adult cattle. Sero-surveillance had been conducted on BRSV antibodies in 8 dairy cattle herds and 4 traditional cattle populations in Riyadh area in 1998. The obtained results revealed that the prevalence rate of BRSV antibodies in 449 serum samples of cattle was 78% with no incidence of associated clinical respiratory diseases.

Key words: Sero-surveillance, bovine respiratory syncytial virus, dairy cattle

INTRODUCTION

Bovine respiratory syncytial virus is a member of the genus pneumovirus of the family paramyxoviridae (Kingsbury *et al.*, 1978), probably distributed world wide (Stott and Taylor, 1985) and an important causative agent of subclinical and acute viral interstitial pneumonia in cattle (Pirie *et al.*, 1981; Odegaard and Krogsrud, 1977). The majority of outbreaks due to BRSV occur in young calves raised indoors under inadequate housing and ventilation conditions during the prolonged cold season (Ploeger *et al.*, 1986).

In view of the presence of many dairy cattle projects in Riyadh area in the Kingdom Saudi Arabia, this study was carried out to declare the prevalence of BRSV in some dairy cattle herds and traditional dairy cattle populations in Riyadh area.

MATERIAL and METHODS

Serum samples:

On early Summer of 1998, 449 serum samples (381 sera of 1-8 month old calves and 68 sera of 2-5 year old cattle) were obtained from 8 dairy cattle farms and 4 traditional cattle populations. These cattle herds and populations had no complain of actual problem of respiratory diseases during the last winter season with no history of vaccination against BRSV.

ELISA test:

Serum samples were examined for the presence of BRSV antibodies using Bio-X BRSV-ELISA kit. Antibody titres in positively reacting sera were determined using the RS method for the transformation of absorbance value into a single figure representing the antibody titre depends on using a reference serum with a known end titre: A proportional basis $((OD \text{ serum sample} - OD \text{ negative control}) / (OD \text{ reference serum} - OD \text{ negative control}) \times 1000)$.

RESULTS

As shown in Tables (1 and 2), the incidence percentage of BRSV antibodies were ranged (65%-95%), (77%-100%) and (33%-100%) with mean titre ranges of (246-676), (620-780) and (211-380) in 296 sera of calves in 8 dairy cattle herds, 85 sera of calves in 4 traditional cattle

populations and 65 sera of adult cattle in 5 dairy cattle herds, respectively.

DISCUSSION

Because, majority of the raised cows in dairy cattle farms in Riyadh area are of Holstein-Frazian cross breed and thousands of such animals are annually imported from USA, Germany and other European countries where BRSV occurs, presence of BRSV in dairy cattle farms in Riyadh was expected even with no actual respiratory clinical signs of the disease in these farms. Of course, the obtained results of the present study proved the incidence of BRSV antibodies in 65% to 100% of 381 sera of calves in 8 dairy cattle herds plus 4 traditional dairy cattle and in 33% to 100% of 68 serum samples of adult cattle in 5 dairy cattle herds. This high prevalence of antibodies (78% of 449 serum samples) suggests that those cattle are commonly exposed to BRSV. Moreover, the absence of clinically suspected cases of BRSV infection among these farms and populations was expected because the owners are commonly used the outdoors systems for raising their cattle as a result of the prolonged hot-dry weather season (between March and October) and dry-quiet cold weather season (between November and February) in Riyadh area. These findings could be explained by Baker (1986) who mentioned that prevalence of BRSV infection in the cattle population is high but the incidence rate of clinical disease is much lower involving cattle under stress of prolonged indoors housing during winter season in the northern countries. Also, surveys in USA, England, Denmark, Sweden and France have detected seropositive rates of 81%, 81%, 84%, 24% and 64%, respectively (Lynch and Derbyshire, 1986).

In conclusion, despite the small number of sera examined in this study, the results obtained generally confirm the presence of circulating BRSV with no related clinical problem of BRSV infection in cattle herds and populations. Also, these findings emphasize the need to focus on BRSV clinical infection in cattle under different circumstances in future.

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Table (1): Prevalence of BRSV antibodies in sera of 1-8 month old calves in Riyadh area.

Name of project, farm and province	No. Tested	Positive			
		No.	Titre range	Mean	%
1. Project or farm:					
Al-Boybia	22	21	138*-1166	(590)	95
Al-Osman	48	36	113-1394	(440)	75
Abnaee Sajir	47	44	145-946	(529)	93
Abnaee Al-Kharj	26	19	127-531	(245)	73
Al-Marai	17	11	270-1099	(616)	65
Al-Majedia	33	24	99-1442	(676)	73
Al-Ghadir	40	30	98-1161	(573)	75
Al-Kharj Agr	63	43	99-1169	(528)	68
Total (1)	296	228	99-1442	(522)	77
2. Provinces:					
Al-Kharj	25	25	484-1000	(710)	100
Al-Aflaj	20	20	121-949	(620)	100
Thadiq	30	23	91-1018	(738)	77
Uniza	10	10	368-1001	(780)	100
Total (2)	85	78	91-1081	(740)	91
Total (1 + 2)	381	306	91-1442	(568)	80

* RS ELISA titre (reciprocal).

Table (2): Prevalence of BRSV antibodies in sera of adult cattle in Riyadh area.

Name of project, farm and province	No. Tested	Positive		
		No.	Titre range	Mean %
1. Project or farm:				
Al-Kharj Agri	21	7	100*-327	(211) 33
Al-Ghadir	10	6	100-644	(204) 60
Al-Majedia	10	7	112-394	(265) 70
Abnaee Al-Kharj	20	16	196-1001	(375) 80
Al-Marai	7	7	124-812	(380) 100
Total (1)	68	43	100-1001	(307) 63

* RS ELISA titre (reciprocal).