

DETECTION OF BOVINE VIRUS DIARRHOEA (BVD) VIRUS ANTIBODIES IN SERA AND MILK OF CATTLE IN ISMAELIA GOVERNORATE

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Abstract

A total of 110 serum samples, as well as, 110 milk samples were collected from breeding cattle at different localities at Ismaelia Governorate. Samples were examined for the presence of bovine viral diarrhoea (BVD) virus antibodies using the SVANOVIR-kit by indirect ELISA technique. The results showed that, 49.1% of sera and 50% of milk samples were positive for BVDV antibodies. Milk is preferable to blood in large scale epidemiological surveys, since the sampling procedure is much simpler, by using ELISA technique.

INTRODUCTION

The bovine viral diarrhoea virus (BVDV), a pesti-virus, is associated with a range of diseases affecting the alimentary tract of cattle. Clinical signs include pyrexia, diarrhoea and reduced milk yield (Barber *et al.*, 1985).

The BVD infection has been recognized in Egyptian cattle and buffaloes for many years (Hafez, 1975; El-Dobeigy *et al.*, 1983 and Baz *et al.*, 1986). The BVD neutralizing antibodies were detected from animals in lower Egypt and Cairo abattoir, and thus, proved that the virus was widespread all over the country (Hafez and Frey, 1972 and El-Dobeigy *et al.*, 1983).

The enzyme linked immunosorbent assay (ELISA) was developed and compared with SNT for bovine pesti viruses (Horner and Orr, 1993), and proved to be more quicker, cheaper and would assist in any large scale screening of cattle herd for BVDV antibodies.

The present study evaluates an indirect ELISA for detection of BVDV antibodies in sera and milk samples collected from cattle at different localities at Ismaelia Governorate.

MATERIALS AND METHODS

Application

A total of 110 blood samples, as well as, 110 milk samples were collected from the same cattle located at El-Ferdan, Kantara Garb, Salhya, El-Tal El-Kabeer and East Kantara at Ismaelia Governorate. Sera were separated, and milk samples were centrifuged at 2000 r.p.m. for 15 minutes; the whey layers were separately collected and kept at - 20°C for examination. Both sera and milk samples were tested for the presence of BVDV antibodies.

Reagents

- Plates: odd columns (1,3,5,9,11) coated with BVD antigen and even columns (2,4,6,8,10,12) coated with control antigen.
- Antibovine IgG horse radish peroxidase.
- TMB solution (Tetramethyl benzidine).
- BVDV positive reference serum.
- BVDV negative reference serum.
- BVDV positive reference milk.
- BVDV negative reference milk.

Application of ELISA technique

Serum and milk samples were tested without dilution, using SVANOVIR BVDV-ab EIA kit for detection of BVDV specific antibodies (Savnova BVDV-ab EIA kit for detection of BVDV specific antibodies (Savnova Biotech, Uppsala, Sweden). The kit procedure was based on a solid phase indirect enzyme Immuno Assay (EIA). At the end of the procedure, plates were read at 450 nm and the results were interpreted according to the baseline instruction given with the kits.

RESULTS

Results of milk and sera after examination for BVDV antibodies by ELISA are presented in Table 1.

The results in this table showed that, out of 110 tested serum samples 54 (49.1%) were positive and 56 (50.9%) were negative for BVDV antibodies by using the indirect ELISA technique. Examination of 110 milk samples from the same animals showed that, 55 (50%) were positive and 55 (50%) were negative for BVDV antibodies.

Table 1. Results of milk and sera examined for BVDV antibodies by ELISA test.

Locality	Milk			Serum		
	Positive	Negative	Total	Positive	Negative	Total
El-Ferdan	5	15	20	5	15	20
Kantara Garb	8	11	19	8	11	19
Salhya	37	4	41	38	3	41
El-Tal El-kabeer	5	20	25	3	22	25
East Kantara	-	5	5	-	5	5
Total	55	55	110	54	56	110
Percentage	50%	50%		49.1%	50.9%	

DISCUSSION

A variety of ELISA systems could be used for detection of BVDV antibodies all over the world (Howard *et al.*, 1985, Bock *et al.*, 1986 and Horner and Orr, 1993).

The results presented in this work indicated that the ELISA is a sensitive, specific and practical test for the serodiagnosis of BVD infection in both sera and milk of infected cattle. This is in agreement with the finding of Niskanen (1993) and Katholm and Marckmann (1994).

The data in this table showed is near or slightly higher if compared with serum samples 49.1% of the same animals. Only one positive milk sample, out of 110 investigated such difference.

This means that the milk samples are preferable to blood in large scale epidemiological surveys since the sampling procedure is much simpler. The results also showed that the BVD infection is widely distributed in different areas at Ismaelia Governorate as the samples were collected from non-vaccinated breeding cattle.

It could be concluded that the ELISA test is a convenient method for screening of sera and milk. In addition, it could be used for monitoring of the disease by testing milk samples to know the persistently infected animals and to assess the current epidemiological situation in any country especially when thinking to BVD control measures.

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الكشف عن الأجسام المناعية في المصل واللبن ضد مرض الإسهال المعدي في الأبقار في محافظة الإسماعيلية

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تم تجميع عدد ١١٠ عينة مصل وكذلك عدد ١١٠ عينة لبن من أبقار من أماكن مختلفة في محافظة الإسماعيلية. تم فحص هذه العينات للكشف عن وجود الأجسام المناعية بها ضد مرض الإسهال المعدي في الأبقار باستخدام اختبار الاليزا الغير مباشر والمجموعة التشخيصية (SVANOVIR). وكانت النتائج كما يلي :

تبين أن ٤٩,١% من عينات المصل و ٥٠% من عينات اللبن كانت ايجابية لوجود الأجسام المناعية ضد مرض الاسهال المعدي في الأبقار. ولذلك اعتبرت عينات اللبن أفضل من عينات الدم في حالة المسح السيرولوجي باستخدام اختبار الاليزا حيث ان عينات اللبن اسهل في جمعها عن عينات السيرم.