"BVD FOETAL PROTECTION INDUCED BY VACCINATION IN CATTLE"

Casademunt[1*], S.; Robles[1], V.; MacArthur[2], M.

[1]HIPRA, Amer (Girona), Spain. / [2]Bovine Health Consultant, New Berlin, Wisconsin, USA.

*Corresponding author santiago.casademunt@hipra.com

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INTRODUCTION

Bovine Virus Diarrhoea Virus (BVDV) is a pestivirus with worldwide distribution. Infections are common in New Zealand with an estimated 85% of herds infected (Horner, 1996). BVDV infection leads to a range of disease problems but reproductive failure is the principal cause of economic loss. There are two ways to protect heifers from reproductive failure:

1. Exposure to natural infection. This produces a strong, long-lasting immunity (Potgeiter, 1995).

2. Vaccination. This offers the advantage of controlled, safe and strategic protection against BVDV (Galletti, 2007).

The following trial was undertaken to determine if vaccination of sero-negative heifers with a multivalent viral vaccine (HIPRABOVIS®, Hipra; Spain) containing a 1a BVD strain (NADL) was able to protect the foetus from infection with a field strain of BVDV.

This study was conducted by: Animal Health Services Centre, Massey University, ESTENDART LTD, Palmerston North, New Zealand.

MATERIALS AND METHODS

48 non-pregnant heifers seronegative to BVDV, Neospora caninum and Enzootic Bovine Leukosis were randomly allocated to two groups of 24. Heifers in one group were vaccinated with HIPRABOVIS®, followed by a booster 21 days later. Heifers in the second group were unvaccinated controls. All 48 heifers were oestrus-synchronized in a CIDR programme then mated using artificial insemination. Ten heifers from each group shown to be pregnant were selected 118 days after vaccination and grazed together with 2 persistently infected (PI) calves for the rest of gestation period. Because of the low survivability of PIs, two PI calves were used for this challenge although it did mean that this provided an unusually high level of infective pressure. All calves born alive were blood sampled at birth prior to suckling colostrum and their BVD status determined by SNT ELISA Ag.

RESULTS

Three heifers had early foetal re-absorptions (early abortion); two from the HIPRABOVIS® group and one from the controls.

Six heifers (one from the HIPRABOVIS® group and 5 from the controls) had late abortions (calves at term). All 6 calves were positive for BVDV by ELISA Ag and antibody.

Table 1. Foetal abortions of pregnant cattle vaccinated with HIPRABOVIS® versus untreated control.

Group	n	Early abortions	Late abortions	Successful calving
HIPRABOVIS®	10	2	1	7
Control	10	1	5	4

Eleven calves were born alive: 7 in the HIPRABOVIS® group and 4 in the controls.

Two of 7 live calves in the HIPRABOVIS® group were identified as PIs (28.5%). The four live calves in controls were all identified as PI animals at birth (100%) by SNT titres (<1:4) and ELISA Ag positive.

When late abortion and PI calf numbers were combined, the protective effect of vaccination with HIPRABOVIS® was significant compared with the unvaccinated group (p=0.009).

Table 2. Comparative protection of pregnant cattle vaccinated with HIPRABOVIS® versus untreated control.

Group	LATE ABORTION		PERSISTENTLY INFECTED (PI)		LATE ABORTION + PERSISTENTLY INFECTED (PI)	
	Number of animals affected/ susceptible	% Protection HIPRABOVIS®	Number of animals affected/ susceptible	% Protection HIPRABOVIS®	Number of animals affected/ susceptible	% Protection HIPRABOVIS®
HIPRABOVIS®	1/8	87,5% Late Abortion	2/7	71,5% Foetal Protection	3/8	62,5% Global Protection
Control	5/9		4/4		9/9	

CONCLUSIONS

The results demonstrate that the use of Hiprabovis® BVD 1a strain in seronegative heifers provided significant protection against foetal infection when the herd was subsequently exposed to a high level of natural BVD challenge during gestation.

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