EFFECT OF BOVINE RHINOTRACHEITIS VIRUS 1 STATUS TO THE HEIFER´S INFLAMMATORY STATUS MEASURED WITH ACUTE PHASE PROTEINS

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INTRODUCTION

The aim of the study was to investigate the effect of the heifer's bovine rhinotracheitis virus 1 (BHV1) status to the inflammation status, measured by serum amyloid A (SAA) and haptoglobin (Hp).

MATERIALS AND METHODS

•To estimate herd level BHV1 infection status in heifers (aged 6-24 months) serum samples were collected from 83 Estonian dairy farms.
•Samples were analyzed for BHV1 antibodies and herds were divided into 3 categories based on BHV1 seroprevalence status in heifers: negative herds (n = 49), prevalence 1-50% (n = 24) and prevalence > 50% (n = 10).
•Herd data was recorded by a questionnaire.
•SAA and Hp were measured from 10 randomly selected samples from each farm by using ELISA test and haemoglobin-binding assay, respectively.
•Linear random-intercept models were used where logarithmically transformed SAA (mg/l) and Hp (g/l) were outcome variables and farm a random factor.
•All variables significant in univariable analysis were included as fixed factors.

RESULTS

Table 1. Linear random-intercept model for factors associated with serum amyloid A (SAA) concentrations of heifers.

Variable (n=number of farms)	Coefficient	p-value	95% CI
Occurrence of respiratory diseases:			
< 10% of heifers (n=74)	0		
> 10% of heifers (n=9)	-1.766	0.037	-3.014, -1.034
Occurrence of eye discharge:			
< 10% of heifers (n=78)	0		
> 10% of heifers (n=5)	3.491	0.001	1.715, 7.106
Prevalence of BHV1 antibodies:			
negative herds (n=49)	0		
prevalence 1- 50% (n=24)	1.385	0.012	1.073, 1.788
prevalence > 50% (n=10)	-1.107	0.624	-1.663, 1.357
Housing system:			
Tie stall (n=23)	0		
Free stall (n=21)	1.686	0.001	1.229, 2.314
Tie stall and free stall (n=39)	1.547	0.002	1.181, 2.029

Table 2. Linear random-intercept model for factors associated with haptoglobin (Hp) concentrations of heifers.

Variable (n=number of farms)	Coefficient	p-value	95% CI
Occurrence of respiratory diseases:			
< 10% of heifers (n=74)	0		
> 10% of heifers (n=9)	-1.449	0.01	-1.917, -1.094
Occurrence of eye discharge:			
< 10% of heifers (n=78)	0		
> 10% of heifers (n=5)	1.376	0.045	1.006, 1.881
Prevalence of BHV1 antibodies:			
negative herds (n=49)	0		
prevalence 1- 50% (n=24)	-1.116	0.036	-1.238, -1.007
prevalence > 50% (n=10)	-1.161	0.086	-1.375, 1.021
Age of heifers	1.067	0.055	-1.001, 1.14
Number of heifers (unit: 100 heifers)	1.047	0.000	1.025, 1.069

CONCLUSIONS

Results of the study suggest that a more active infection (prevalence < 50%) of BHV1 in the herd may be associated with a stronger inflammatory stimulus (higher SAA levels) in heifers. However, lower Hp levels do not confirm this hypothesis.

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