

Detection of antibodies of the *Clostridium novyi* type B toxoid in swine sera



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INTRODUCTION

Clostridium(C.) novyi is a gram-positive, obligate anaerobic, and endospore-forming bacteria. *C. novyi* is classified into 4 strains (A to D type) by the exotoxins, and the lethal and necrotizing alpha toxin is considered to be the principle toxin of the type B strain in pigs. This toxin causes necrosis by increasing permeability of the cell barrier, and disrupting intercellular junctions. So, *C. novyi* type B commonly causes infectious necrotic hepatitis, so called black diseases, and it has been observed in sheep and other animals. The infected liver uniformly infiltrated with many gas bubbles, so the liver presents a spongy appearance on the cut surface. Although the *C. novyi* infections are unusual in pigs, cases of sudden death in sows have been reported in Europe.

This experiment detected the production of specific antibodies of *C. novyi* type B toxoid using ELISA in swine sera.

MATERIALS AND METHODS

In this experiment, the sera of 343 sows from 27 farms were used for ELISA (Hipra, Spain) detecting antibodies against *C. novyi* type B toxoid. First, the plate was coated with the *C. novyi* type B antigen diluted 1:100 with carbonate buffer and incubated all night at 4°C in the humidity chamber. After blocking the plate, the diluted to 1:200 test sera including the positive and negative control sera were added to the plate. For the secondary antibody, the monoclonal antibody against porcine IgG conjugated with horseradish peroxidase was used. Then, the plate was added with the substrate dilution and stop solution and the plate was read at OD 405nm. The sera were evaluated by calculating the reference index percentage for each of them, and the sera were considered as positive if the value of the tested sera was bigger than 10.

The tested sample was taken statistics by the positive rate of the total sows and farms.

RESULT

Table 1. Positive rate of antibodies against *C. novyi* type B infection by farms and sows

	Farms	Sows
	21/27*	129/343*
Positive rate(%)	77.8	37.6

*No. of positive / Total

Table 2. Distribution according to positive rate of antibodies against *C. novyi*

	Positive rate			
	0	0<x≤33	33<x≤66	66<x≤100
Farms	6/27*	6/27	12/27	3/27
%	22.2	22.2	44.4	11.2

*No. of positive / Total

In this experiment, 129 sows of 21 farms have been revealed as a positive for *C. novyi* type B. So the positive rates of total sows and farms were 77.8% and 37.6% respectively (Table 1). And looking the range of the rate of farms positive for antibodies against *C. novyi* type B, there were most of farms at range 33~66%(Table 2).

CONCLUSION

Although the infection of the *C. novyi* type B is uncommon, these results can be a useful data for further investigation of *C. novyi* type B because there was few survey detecting the infection of *C. novyi* type B for now.

REFERENCE

1. García A et al: 2009, J Swine Health Prod. 17:264–268
2. Duran CO et al: 1997, Pig J. 39: 37–53.
3. Almond P et al: 2005, Berliner und Münchener Tierärztliche Wochenschrift. 118: 296–299.
4. Eklund MW et al: 1976, Infection and immunity. 14: 793–803