

Detection of Pathogens Associated with Bovine Respiratory Disease: Clinical Cases in Thai Dairy Herds

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INTRODUCTION

Bovine respiratory disease (BRD) is the major source of economic loss for the cattle industry. The major respiratory pathogens, such as bovine respiratory syncytial virus (BRSV), bovine viral diarrhoea virus (BVDV), bovine herpesvirus type1 (IBR), Parainfluenza 3 (PI3) virus impaired the animal's respiratory defenses in which *Pasteurella multocida*, *Histophilus somni*, *Mannheimia haemolytica* and *Mycoplasma bovis* caused the complex of respiratory disturbances. The investigation of clinical cases of BRD in dairy farms supports the information for control and treatment strategies. We aim to investigate pathogens that associated with clinical cases of bovine respiratory disease in Thai dairy herds.

CASE REPORT

We received the sample or animal with clinical signs of BRD from five dairy farm locations in the western and central parts of Thailand. Total of 24 cases (11 calves, 5 steers, 8 milking cows) in which 28 swabs and/ or lungs were collected or submitted. The majority of clinical signs are including depress, fever, hyperventilation, nasal discharge, and death.

UTM-RT™ transport medium for viruses, chlamydia, mycoplasma and ureaplasma were used for swabs and tissue submitting to our laboratory where QIAamp® cadof® Pathogen Kit was used for DNA and RNA extraction.

To detect bovine respiratory syncytial virus (BRSV), bovine viral diarrhoea virus (BVDV), bovine herpesvirus type1 (IBR), Parainfluenza 3 (PI3) virus, *Pasteurella multocida*, *Histophilus somni*, *Mannheimia haemolytica* and *Mycoplasma bovis*, the conventional PCRs were performed according to methodology and primer sets that has been described in the references [1-8]

RESULT AND DISCUSSION

The result is shown in Table 1. We are able to detect one sample of BVDV from the steer. *Pasteurella multocida*, *Histophilus somni*, *Mannheimia haemolytica* are detected in these cases as single pathogen or multiple-pathogen infections. However, clinical cases with negative result is still very high percentage (39% sample, 42% animal). The histopathology of lung tissue revealed the syncytial cells in two cases even though BRSV cannot be detected.

Table 1. The positive PCR results for BRDC pathogens

Positive PCR results for BRDC pathogens	Swabs and tissue (n=28)		Animal (n=24)	
Negative results	11	39%	10	42%
<i>H. somni</i>	3	11%	3	13%
<i>M. Haemolytica</i>	3	11%	2	8%
<i>P. multocida</i>	4	14%	2	8%
BVDV	1	4%	1	4%
<i>H. somni</i> + <i>M. haemolytica</i>	3	11%	3	13%
<i>H. somni</i> + <i>M. haemolytica</i> + <i>P. multocida</i>	3	11%	3	13%

To verify our results, the Dembo respiratory-PCR [10] will be further studied and applied in order to investigate the BRD in these dairy herds.

CONCLUSION

We are able to detect the pathogens associated with bovine respiratory disease in the Thai dairy herds. However, BVDV is the only viral pathogen that we can detect in this study.

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