

OCCURRENCE OF *BORDETELLA BRONCHISEPTICA* AND *PASTEURELLA MULTOCIDA* ASSOCIATED WITH NON-PROGRESSIVE ATROPHIC RHINITIS ON PIG FARMS IN THAILAND VIA ORAL FLUIDS

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INTRODUCTION

Porcine Atrophic Rhinitis (AR) is a chronic respiratory disease caused by *Bordetella bronchiseptica* (Bb) and toxigenic *Pasteurella multocida* type D (PMT)¹. Currently, AR is divided into two forms: so-called Non-Progressive AR (NPAR), produced by Bb, which affects growth performance and predisposes to other bacterial infections and Progressive AR (PAR), which is produced by both Bb and PMT and induces severe cases of nasal septal deviation². Oral Fluid (OF) sampling for AR is emerging as a popular alternative to tissues because it is convenient, is an animal welfare-friendly method and is cost-effective³. In Thailand, the presence of Bb and PMT on farms remains unclear, but poor productivity parameters could indicate the presence of these pathogens as an asymptomatic form of AR. The aim of this study was to check the presence of Bb and PMT in different areas in Thailand.

MATERIALS AND METHODS

A total of 10 swine farms with different farm managements and herd sizes (medium- and large-scale) from the Chaing mai, Chumphon, Chonburi, Kanchanaburi, Ratchaburi and Lopburi provinces of Thailand were evaluated. All the farms were suffering from Porcine Respiratory Disease Complex (PRDC). Pigs from 4 out of 10 farms had never been immunized by AR vaccine (Non-Vaccinated NV). OF samples from different pens and different ages (gilts, sows and pigs of 4-27 weeks of age) were eluted using FTA cards and sent to the DIAGNOS[®] Laboratory (HIPRA Thailand). DNA extraction and a real-time Polymerase Chain Reaction (rt-PCR) test^{3,4} was performed for both Bb and PMT detection.

RESULTS

The overall prevalence of Bb on 10 swine farms was demonstrated by a rt-PCR method showing 100% positivity (10/10), whereas PMT was observed on only 1 pig farm (10%). Investigation of Bb and PMT in different stages of pigs from non-vaccinated and vaccinated breeder pig farms is shown in table 1. The highest Bb positivity was observed in fattening pigs from NV farms.

CONCLUSIONS AND DISCUSSION

It is accepted that *Bordetella bronchiseptica* and toxigenic *Pasteurella multocida* may have been circulating in this region as endemic bacteria, whether or not AR vaccine is used. However, the outcome of low amounts of DNA in OF samples is not directly linked to the clinical stage of AR and its virulence. Moreover, our findings provide useful data to facilitate a better understanding of the status of these pathogens in Thailand. Control measures for PAR and NPAR will be relevant to future work on testing the field efficacy of AR vaccines in Thai pig farming.

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Group	Group	Nº OF sample	Bb pos	Bb positive (pos)			PMT pos	PMT positive (pos)		
				+	++	+++		+	++	+++
Gilts	NV	9	5/9	4/5	1/5	0/5	0/9	0/0	0/0	0/0
	V	30	12/30	9/12	2/12	1/12	1/30	0/1	0/1	1/1
Sows	NV	-	-	-	-	-	-	-	-	-
	V	6	2/6	1/2	1/2	0/2	0/6	0/0	0/0	0/0
Grower-finisher pigs	NV	14	5/14	5/5	0/5	0/5	0/14	0/0	0/0	0/0
	V	9	2/9	2/2	0/2	0/2	0/9	0/0	0/0	0/0
Fattening pigs	NV	41	25/41	17/25	8/25	0/25	0/41	0/0	0/0	0/0
	V	16	11/16	11/11	0/11	0/11	0/16	0/0	0/0	0/0
Pigs at slaughterhouse	NV	4	1/4	1/1	0/1	0/1	0/4	0/0	0/0	0/0
	V	2	0/2	0/0	0/0	0/0	0/2	0/0	0/0	0/0

Table 1. Detection of Bb and toxigenic PMT in pigs from vaccinated (V) and non-vaccinated (NV) breeder pigs in Thailand, 2017-2019.

* Bacterial DNA was detected in low (+), medium (++) and high (+++) amounts.