CHARACTERIZATION OF RESISTANCE PROFILE OF *Actinobacillus pleuropneumoniae* STRAINS IN BRAZIL

Bárbara Costa[(1)], Adrienny Trindade Reis[(2)], Pedro Henrique de Lima Nogueira Filsner[(1)], Maria Roberta Felizardo[(1)], Vasco Tulio de Moura Gomes[(1)], Carlos Emilio Cabrera Matajira[(1)], Andrea Moreno[(1)].

[(1)]Laboratory of Swine Health, Department of Preventive Veterinary Medicine and Animal Health, School of Veterinary Medicine and Animal Science of the University of São Paulo, Brazil; [(2)]IPEVE, Specialized Veterinary Research Institute, Brazil.

Introduction

Actinobacillus pleuropneumoniae is the etiologic agent of porcine pleuropneumonia. It is among the most economically significant contagious respiratory diseases causing losses to pig farms worldwide (1). In Brazil, it is a re-emerging disease. Although antimicrobial agents are used to treat associated respiratory infections, statistical data on antimicrobial resistance in pig respiratory bacterial isolates in the country is still insufficient.

Therefore, the main objective of this study is to determine the antimicrobial resistance pattern of the *A. pleuropneumoniae* isolated from lungs of pigs showing symptoms of pleuropneumonia in Brazil.

Materials and methods

In order to investigate the antimicrobial susceptibility of *A. pleuropneumoniae* isolates, a total of 99 *A. pleuropneumoniae* were isolated from lungs with lesions of acute or chronic pleuropneumonia. Swabs were collected from these lungs, then plated on MacConkey medium, aerobically incubated and placed on sheep blood agar at 4% with beta hemolytic *Staphylococcus aureus*. Subsequently, plates were incubated in 10% of CO_2 for 24-72 hrs at 37ºC ± 1ºC. The following biochemical tests were conducted: NAD (Nicotinamide Adenine Dinucleotide) necessity for growing, haemolysis, CAMP test, catalase, oxidase, urease and mannitol as Quinn et al. (1994) (2). The DNA was extracted from the isolated strains and amplified by Polymerase Chain Reaction (PCR) using specific primers for *A. pleuropneumoniae*. Minimal inhibitory concentrations (MICs) of drugs were determined using BOPO6F MIC Plate - Sensititre® against the following antimicrobial agents: ampicillin, clindamycin, chlortetracycline, danofloxacin, enrofloxacin, florfenicol, gentamicin, neomycin, oxytetracycline, penicillin, sulfadimethoxine, spectinomycin, cotrimoxazole, tiamulin, tilmicosin, tulathromycin, tylosin, ceftiofur.

Results

Among the 99 *A. pleuropneumoniae* strains evaluated, all were sensitive to ceftiofur, tulathromycin, gentamicin and tilmicosin. Low levels of resistance were observed against cotrimoxazole, florfenicol and spectinomycin (2%), ampicillin (7%), enrofloxacin and tiamulin (8%), neomycin (10.1%) and danofloxacin (12.1%).

Table 1. Resistance profile of *A. pleuropneumoniae* isolates from swine in Brazil.

Antimicrobial	MIC (µg/mL)			Resistant
	MIC50	MIC90	Range	% (n=99)
Ceftiofur	≤0,25	≤0,25	≤0,25	0
Tiamulin	16	16	2-32	8
Chlortetracycline	2	4	≤0,5-8	66.6
Oxytetracycline	>8	>8	≤0,5-8	67.6
Penicillin	0,5	1	≤0,12->8	26.3
Ampicillin	≤0,25	0,5	≤0,25->16	7.0
Danofloxacin	≤0,25	0,5	≤0,25->1	12.1
Cotrimoxazole	≤2/38	≤2/38	≤2/38->2/38	2.0
Tylosin	32	>32	4->32	98.9
Tulathromycin	8	16	2-16	0
Clindamycin	8	8	2->16	55.5
Sulfadimethoxine	>256	>256	≤256->256	50.5
Gentamicin	2	2	≤1-4	0
Florfenicol	0,5	0,5	≤0,25-8	2.0
Neomycin	≤4	8	≤4-16	10.1
Spectinomycin	32	32	16-64	2.0
Tilmicosin	8	8	≤4-16	0
Enrofloxacin	≤0,12	0,5	≤0,12->2	8.0

Discussion

Antibiotic therapy is effective in clinically affected animals only in the initial phase of the disease, when it can reduce mortality and to prevent its spread. Unfortunately, the excessive and indiscriminate use of antibiotic agents has resulted in an increase in antimicrobial resistance in a great number of animal and human bacterial pathogens (3).

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