We are delighted that the International Pig Veterinary Society Congress 2004, decided to select South Africa as the host country for the 20th IPVS Congress. The Pig Veterinarians of South Africa will ensure that this congress lives up to the best traditions of previous congresses; incorporating an interesting and topical scientific programme, fascinating accompanying persons tours and an excellent social programme, allowing delegates the opportunity to network with their overseas colleagues.

This, the first IPVS congress on the African continent, will undoubtedly be of enormous benefit in generating solutions to the emerging pig veterinary challenges, especially those related to exotic and changing viral diseases, decreased use of antimicrobials and nutritional advances. The congress is important to further pig veterinary science in South Africa, to encourage younger veterinarians to join the pig industry, as a vehicle to generate funds for research and to improve the pig industry in Southern Africa.

South Africa is a magnificent and beautiful country, and offers tourists value for money. Thus, pre and post congress tours will be a major attraction for delegates to come to South Africa. Durban, in KwaZulu Natal, is a vibrant multi-cultured city with magnificent beaches, easily accessible game parks, theme villages and a moderate winter climate making it an ideal tourist destination. We urge our colleagues throughout the world to use this opportunity to get a glimpse of the continent’s rich and fascinating wonders and to enjoy the hospitality of their African friends.

Dr Peter Evans
Chairman: Local Organising Committee: IPVS 2008
CHARACTERIZATION OF SALMONELLA TYPHIMURIUM MULTIDRUG RESISTANCE AND THE REVERSAL OF ANTIMICROBIAL RESISTANCE

AZ Guo¹, AQ Jia², WH Liu², HC Chen²
¹Huazhong Agricultural University, WUHAN, China
²National Key Lab of Agric. Microbiol., WUHAN, China

Introduction

Salmonella antimicrobial resistance spreads rapidly in all countries as a result of disease treatment and animal feed supplementation and causes a global health concern. This study investigated the multiresistance of Salmonella isolates from diseased pigs and the resistance reversal.

Materials and Methods

Faecal sample were collected from the live diseased pigs. Salmonella isolation was performed with standard conventional methods and confirmed by BIOLOG Microstation System. The serotypes were confirmed using antisera to somatic(O) and flagellar(H) antigens (Lanzhou Bioproducts Institute, China). 19 antibiotics susceptibility was tested on Muller-Hinton Agar (M-H) plates with Kirby-Bauer(K-B) disk diffusion method. One multidrug resistant isolate was selected and the resistance was removed with high temperature (45°C) and high concentration (0.5%) of SDS. The resistance was confirmed by detection of resistance genes and plasmid virulence genes by PCR. The virulence after resistance reversal was determined in mice.

Results

33 salmonellosis cases were identified in 903 diseased pig herds mainly from central China and the salmonellosis constituted 3.65% of the pig diseases in the investigated area. Salmonella choleraesuis constituted 64% (21/33) of isolates, whereas Salmonella typhimurium accounted for 24% (8/33). The 21 antimicrobials were tested and 94.3% of the isolates were resistant to at least 10 antimicrobials. Most serotypes except S. typhimurium were sensitive to amikacin, fluoroquinolones, furazolidone, polymyxin B, cephalosporins (cephradine and cefazolin). S. typhimurium isolates were susceptible only to amikacin and cephalosporins (cephradine and cefazolin). One Salmonella typhimurium isolator 17Y was selected to investigate resistance elimination. SDS treatment removed the resistance of 11 antibiotics including Fur, Cip, Nor, Enr, Amp, Amx, Gen, TMP/SMZ, TMP, Chl, Tet. PCR demonstrated that blaTEM, blaOXA-1, catI, tet(B), aacC2 existed in the resistance parent isolate but not in the sensitive strain suggesting these genes were located on the plasmids. Furthermore, the class integron, carrying dhfrX for trimethoprim resistance, aadA18b for aminoglycoside resistance and sul1 for sulfamethoxazole resistance, was identified in the plasmid. Although the target genes gyrA and parC for quinolone category were detected by PCR from both resistant and sensitive strains, it was revealed that an mutation of N87D(AAC→GAC) in gyrA resulted in the resistance reversal. Meanwhile, 6 Salmonella plasmid virulence genes (spv and rck) were eliminated with the resistance reversal, suggesting that the virulence plasmid was cured.

Discussion

This study confirmed that salmonellosis constituted 3.65% of the pig diseases in the investigated area. The most common serotype is S. choleraesuis, followed by S. typhimurium. Currently, fluoroquinolones, cephalosporins (cephradine and cefazolin), amikacin, furazolidone, polymyxin B would be effective agents to treat most swine salmonellosis of China. Most of the resistance genes (11/14) were located on plasmids and the resistance could be reversed by plasmid elimination with SDS treatment. Although the target gene gyrA for quinolone category existed in the genome, SDS treatment induced the mutation and rendered the resistant strain sensitive to the antibiotics of quinolone category. In addition, the resistance strain had a stronger virulence in mice compared with the sensitive strain. In conclusion, to eliminate the plasmids would be an effective way to deal with the multiresistance issue of Salmonella in pigs.

Acknowledgment: This work was supported by the Grant(30571386) from National Natural Science Foundation of China.