Antibiotic susceptibility of bacteria isolated from respiratory tract of pigs in Poland between 2004 and 2008

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Abstract

Antibiotic susceptibility of bacteria isolated from nasal swabs and lungs of pigs, to 16 commonly used antibiotics, was determined by disc diffusion test. β-lactams showed the best activity against *Streptococcus suis* (*S. suis*) (> 99% of susceptible strains). The lowest sensitivity of *S. suis* was evidenced to: tylosin, tetracycline and neomycin (50%, 40% and 25%, respectively). Isolates of *Escherichia coli* (*E. coli*) demonstrated the highest susceptibility to cephalosporin (85% strains), gentamicin and norfloxacin (over 74%). The lowest susceptibility of *E. coli* was demonstrated to tiamulin and penicillin (11.3% and 1.9%, respectively). Over 80% of *Actinobacillus pleuropneumoniae* (*App*) strains were susceptible to all antibiotics tested. The highest resistance of *App*, but demonstrated by below 20% of tested isolates only, was evidenced to neomycin and LxS. Isolates of *Pasteurella multocida* (*Pm*), *Haemophilus parasuis* (*Hps*) and *Arcanobacterium pyogenes* (*A. pyogenes*) were highly susceptible to the most antibiotics included in the analysis. The comparison of the in vitro susceptibility of pathogens to the chemotherapeutics used on Polish farms for the therapy of bacterial infection of pigs within the last five years and the last 10 years, showed an increasing percent of *E. coli* and *S. suis* strains resistant to commonly used antibiotics. It is also shown that *Pm*, *Hps*, *App* and *A. pyogenes* isolates were continuously susceptible to the most chemotherapeutics applied.

Key words: swine, respiratory tract, bacteria, antibiotic susceptibility

Introduction

The health and productivity of livestock are important economic factors influencing pig production worldwide. Sometimes, although immunoprophylaxis and changes in the management and environmental conditions are introduced, and biosecurity rules are implemented, the only effective and economically justified method of disease control is chemotherapy (Pejsak et al. 2005).

One of the biggest problems in the control of bacterial disease, observed during the last two decades, was the increase of resistance of many bacterial species to commonly used antibiotics (Shin et al. 2005). The appearance of resistance results from spontaneous mutations or gene transfer from resistant to susceptible strains and selection (Acar and Röstel 2001). In general, resistant bacteria are small in number within the whole population of the particular species. The result of improper antibiotic use is elim-