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Methicillin (oxacillin)-resistant Staphylococcus aureus (MRSA) in the pig production chain

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Recently the isolation of methicillin-resistant *Staphylococcus aureus* (MRSA) strains from several food producing animals and from foods has been reported. During food production, contamination of meat with MRSA may occur and consequently this pathogen can be transmitted to human. The aims of this study were (i) to estimate the prevalence of *S. aureus* in farmed pigs, farm environment and personnel; (ii) determine the presence of *S. aureus* in pork products; (iv) detect the presence of MRSA among isolated strains.

Samples of pig stool, raw and processed pork meat and related environments, together with the personnel were collected. Samples were submitted to the research of *S. aureus* following the international method of detection (UNI EN ISO 6888-2) and susceptibility tests were performed using the automated *VITEK 2* system. Moreover, a PCR for the detection of the *mecA* gene was applied.

Overall, *S. aureus* were more frequently detected from pig and farm than from meat and meat-working environment. Among the 80 isolated strains, 64,1% were methicillin resistant. All MRSA strains were resistant to at least one of the tested antibiotics and 6 strains demonstrated multiresistance to 7 antibiotics. The most frequent resistance observed were benzylpenicillin and ampicillin followed by tetracycline, oxacillin, and co-trimoxazole (figures 1 and 2). All strains were vancomycin susceptible. The majority of MRSA strains were isolated at farm level.

MRSA poses a potential threat to public health, as people in contact with food production animals are at much higher risk of colonization. The results of the present study highlighted that, although only small amounts of MRSA were isolated from foods, pork meat may constitute a risk for consumers. For these reasons further studies are needed to elucidate transmission routes of MRSA in relation to live animals, meat and other foods and to provide the tools for preventing the spread of MRSA.

Figure 1: antimicrobial sensitivity pattern of all isolated strains

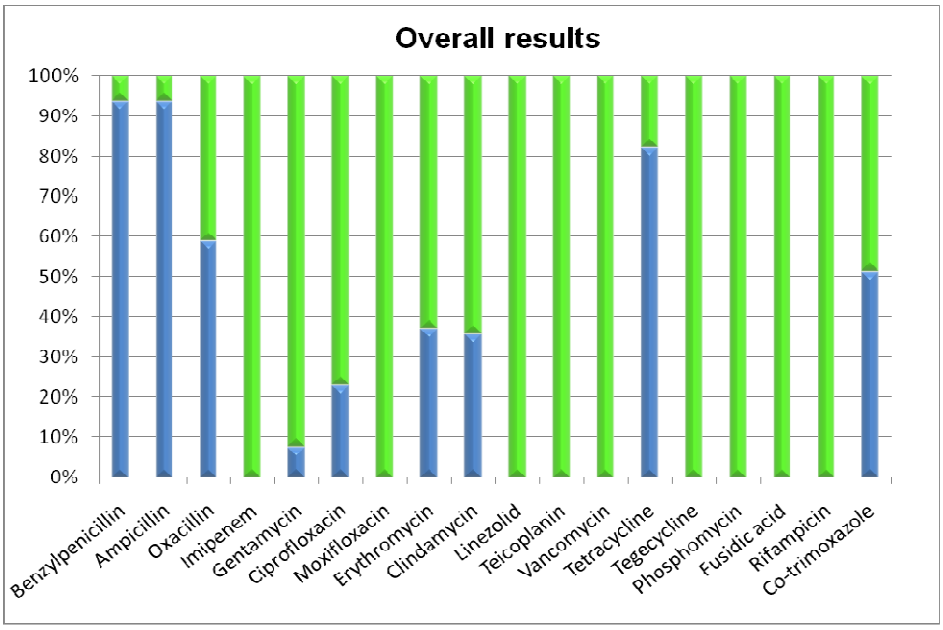
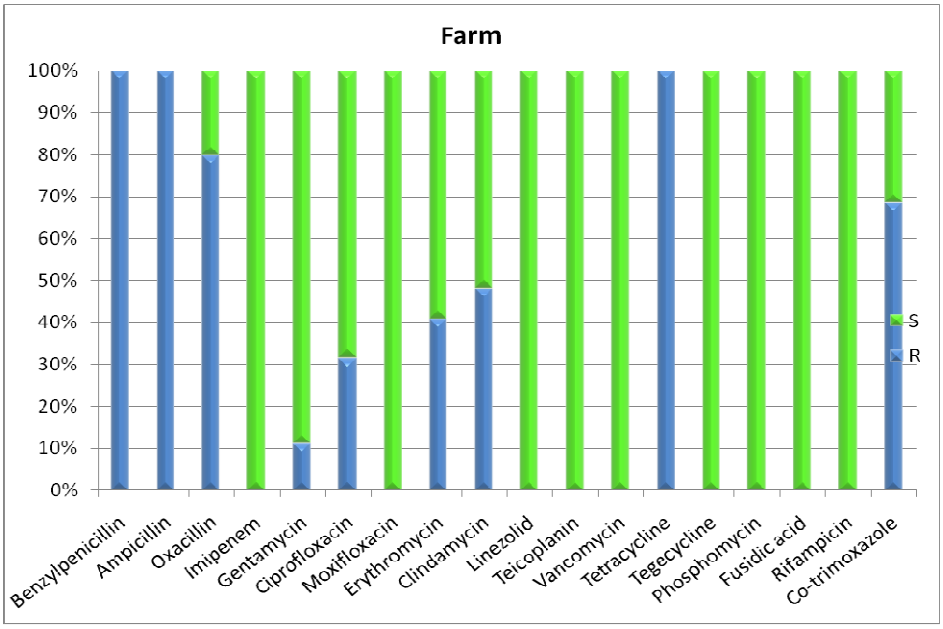


Figure 2: antimicrobial sensitivity pattern of pig and farm-environmental strains



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