

3rd World Congress and Exhibition on

ANTIBIOTICS AND ANTIBIOTIC RESISTANCE

July 31-August 01, 2017 | Milan, Italy

Staphylococci from food as a reservoir of antibiotic resistance genes

Wioleta Chajęcka-Wierzchowska and Anna Zadernowska
University of Warmia and Mazury in Olsztyn, Poland

Statement of the Problem: Coagulase-Negative *Staphylococci* (CoNS) are present in the natural microflora of humans and animals. They occur mainly on the skin and mucous membranes and colonize the gastrointestinal tract and the respiratory system. The ubiquity of *Staphylococci* poses a risk of food contamination. CoNS strains have been regarded as harmless to humans for many years. They have been classified as saprophytic microflora, which are unable to cause diseases. A steady increase in the role of CoNS in causing hospital-acquired infections has been observed in recent years. A food production chain can be an important route of transfer of bacteria to humans. However, determination of the CoNS count in routine microbiological tests is not obligatory. Antibiotic resistance is currently one of the most important public health issues. For a long time, it has been linked only with the hospital environment. The presence of antibiotic-resistant strains among food microorganisms suggests that they can play a much more important role in the transmission of genes of antibiotic resistance than previously thought. The aim of this work was to study the pheno- and genotypical antimicrobial resistance profile of Coagulase Negative *Staphylococci* (CoNS) isolated from food.

Methodology & Theoretical Orientation: CoNS isolates from food were tested for resistance to 15 antibiotics by the disk diffusion method according to CLSI. PCR was used for the detection of antibiotic resistance genes.

Findings: Most of the isolates were resistant to clindamycin, rifampicin, erythromycin and cefoxitin. Multidrug resistant strains were observed. All methicillin resistant *Staphylococci* harbored *mecA* gene. Isolates, phenotypic resistant to tetracycline, harbored at least one tetracycline resistance determinant on which *tet(M)* was most frequent. In the erythromycin resistant isolates, the macrolide resistance genes *ermC* or *msrA/B* was present.

Conclusion & Significance: The results obtained indicate the need for food monitoring (especially food of animal origin) for the presence of antibiotic-resistant CoNS and the possibility of transferring and transmitting antibiotic resistance genes.

Staphylococcus isolates	Gen	Tetracycline resistance genes	DNase Tyrosinase	Erythromycin resistance genes	Food source	Phenotypic resistance
<i>S. epidermidis</i>	<i>mecA</i>	<i>tetA</i>	+	<i>ermC</i> , <i>ermB</i>	meat	R: FOX, F, Cl, DA, FOX, F, Cl
<i>S. epidermidis</i>	<i>mecA</i>		+		meat	DA, FOX, F, Cl
<i>S. epidermidis</i>		<i>tetA</i>	+		vegetables	R: TSC, RC, DA, LST, RC, Cl
<i>S. epidermidis</i>		<i>tetA</i>	+		meat	DA, TSC, Cl
<i>S. epidermidis</i>	<i>mecA</i>	<i>tetA</i> , <i>tetB</i>	+	<i>ermC</i>	ground meat	DA, TSC, Cl
<i>S. epidermidis</i>	<i>mecA</i>	<i>tetA</i> , <i>tetB</i> , <i>tetC</i>	+	<i>ermC</i>	meat	R: DA, FOX, TSC, Cl, DA, FOX, TSC, Cl
<i>S. epidermidis</i>	<i>mecA</i>	<i>tetA</i> , <i>tetB</i>	+		meat	DA, FOX, LST, Cl
<i>S. epidermidis</i>	<i>mecA</i>	<i>tetA</i> , <i>tetB</i>	+		ground meat	DA, TSC, Cl, FOX, Cl
<i>S. aureus</i>	<i>mecA</i>	<i>tetA</i>	+	<i>ermB</i>	ground meat	R: FOX, TSC, RC, DA, Cl
<i>S. saprophyticus</i>		<i>tetA</i>	+	<i>ermB</i>	meat	R: DA, TSC, Cl, DA
<i>S. citreus</i>	<i>mecA</i>		+		meat	DA, FOX, Cl
<i>S. citreus</i>			+		meat	DA, TSC, Cl
<i>S. citreus</i>	<i>mecA</i>	<i>tetA</i> , <i>tetB</i>	+	<i>ermC</i>	meat	R: DA, FOX, TSC, Cl, FOX, Cl
<i>S. citreus</i>	<i>mecA</i>	<i>tetA</i> , <i>tetB</i>	+	<i>ermC</i>	meat	DA, TSC, RC, LST
<i>S. citreus</i>	<i>mecA</i>	<i>tetA</i>	+	<i>ermC</i>	meat	R: DA, FOX, TSC, RC, DA, LST
<i>S. citreus</i>	<i>mecA</i>	<i>tetA</i>	+	<i>ermB</i>	meat	R: DA, F, TSC, RC
<i>S. citreus</i>			+		meat	TSC, Cl, FOX, Cl, LST
<i>S. citreus</i>			+	<i>ermC</i>	meat	R: DA, F, TSC, RC, Cl, LST

Biography

Wioleta Chajęcka-Wierzchowska has her expertise in antibiotic resistance and virulence factors of *Enterococcus* and *Staphylococcus* isolated from food. She is an employee of the Chair of Industrial and Food Microbiology. The hitherto of her scientific achievements comprise a total of 67 items including publications in renowned international journals from the Journal Citation Reports (JCR) database. Furthermore, she is an author and co-author of many reports presented during national and international academic conferences, for which she often received distinctions and awards. She is also experienced in reviewing scientific papers on the request of editors of international journals.

wioleta.chajęcka@uwm.edu.pl

Notes: