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• Introduction

Enterococci are a group of lactic acid bacteria (LAB) that includes pathogenic, spoilage, and pro-technological microorganisms. These bacteria constitute part of the common LAB community present in raw milk and they were also found in wooden vat biofilms, animal rennet pastes and in different typology of traditional cheeses.

Although their important technological properties, in the last few years enterococci have assumed a major importance in clinical microbiology because they are intrinsically resistant to many antimicrobial agents.

• Material and method

Samples of raw cow, goat and sheep milk, wooden vats and traditional Sicilian cheeses (Caciocavallo Palermitano, PDO Pecorino Siciliano, PDO Piacentino Ennese and Ricotta cheese) were subjected to microbiological enumeration of enterococci. A total of 66 enterococci strains were collected and subjected to the genotypic analysis by means of the multiplex PCR assay on the *sodA* gene. The 66 *Enterococcus* strains were tested for their susceptibility to 14 antimicrobial compounds by the disk diffusion method according to the Clinical and Laboratory Standard Institute guidelines (CLSI, 2017).

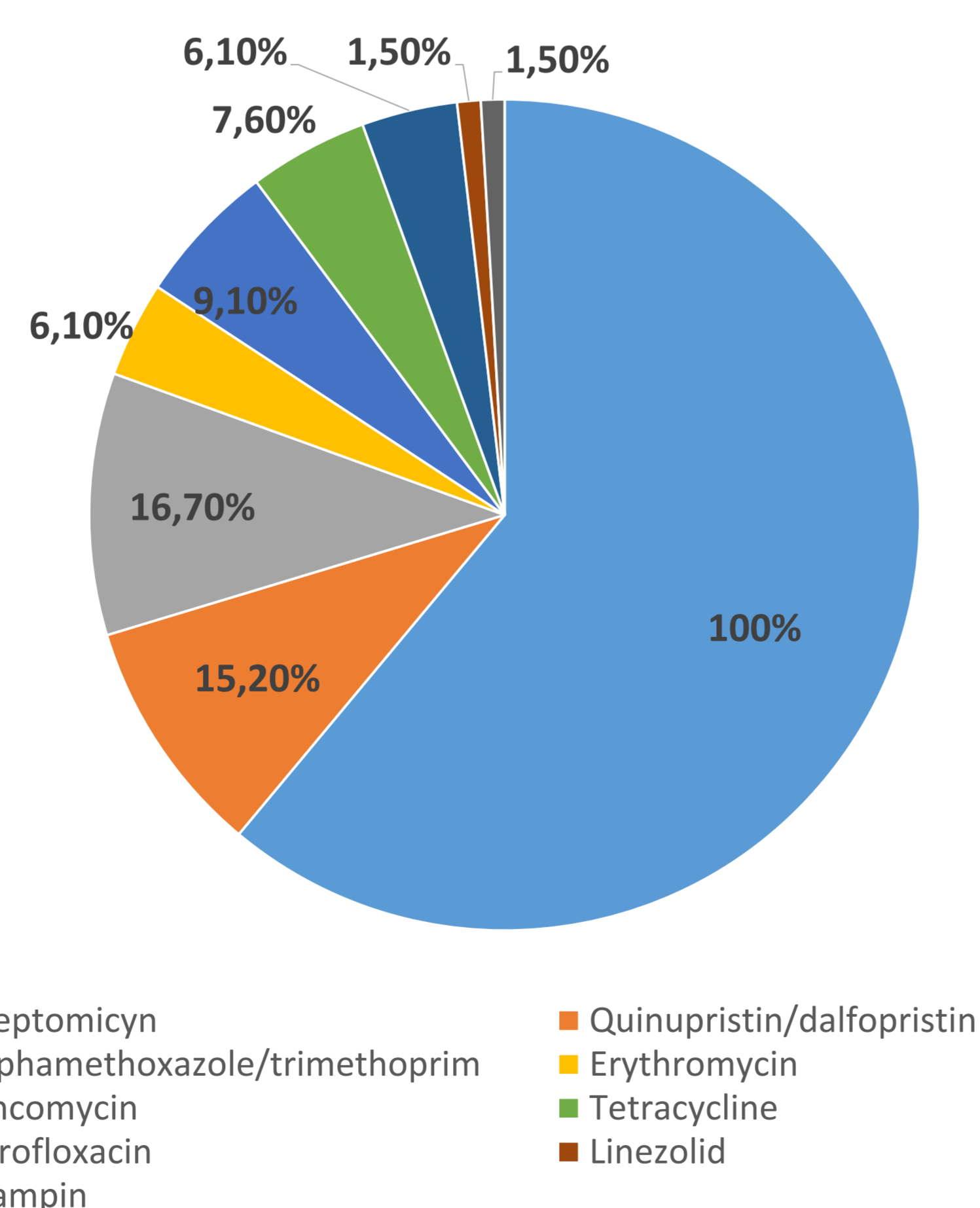


Fig.1: Antimicrobial resistant percentage

• Results and discussions

Enterococci were detected in all samples and levels were in the range of 1-6 Log CFU/mL for milk samples and Log CFU/g for cheeses.

Table 1 show the susceptible (S), intermediate (I) or resistant (R) strains for each antimicrobial compound.

14% of strains (table 2) showed multidrug-resistant phenotype, 5 from milk, 1 from wooden vat and 3 from cheeses.

The highest percentages of resistance (figure 1) have been found with regard to streptomycin (100%) and sulphamethoxazole/trimethoprim (16.7%) and quinupristin / dalfopristin (15.2%).

All strains tested were susceptible to ampicillin and high levels of gentamicin.

Ciprofloxacin is the antimicrobial toward which almost all the strains (59.1%) showed an intermediate susceptibility, followed by erythromycin and quinupristin/dalfopristin (22.7%).

Antimicrobial	R	I	S
Vancomycin - 30 µg	6 (9,1%)	5 (7,6%)	55 (83,3%)
Erythromycin - 15 µg	4 (6,1%)	15 (22,7%)	47 (71,2%)
Penicillin G - 10 UI	0	1 (1,5%)	65 (98,5%)
Tetracycline - 30 µg	5 (7,6%)	2 (3%)	59 (89,4%)
Ampicillin - 10 µg	0	0	66 (100%)
Ciprofloxacin - 5 µg	4 (6,1%)	39 (59,1%)	23 (34,8%)
Levofloxacin - 5 µg	0	1 (1,5%)	65 (98,5%)
Linezolid - 30 µg	1 (1,5%)	3 (4,5%)	62 (93,9%)
Gentamicin - 120 µg	0	0	66 (100%)
Chloramphenicol - 30 µg	0	3 (4,5%)	63 (95,5%)
Quinupristin/Dalfopristin - 15 µg	10 (15,2%)	15 (22,7%)	41 (62,1%)
Streptomycin - 10 µg	66 (100%)	0	0
Rifampin - 30 µg	1 (1,5%)	2 (3%)	63 (95,5%)
Sulphamethoxazole/trimethoprim - 25 µg	11 (16,7%)	1 (1,5%)	54 (81,8%)

Multiresistant strain	Species	VA	E	TE	CIP	STR	QD	RD	SXT
821	<i>E. durans</i>		R			R			R
2799	<i>E. durans</i>				R	R			R
2823	<i>E. faecium</i>	R			I	R	I		R
2902	<i>E. faecium</i>		R		I	R	I	R	
3018	<i>E. hirae</i>	R			I	R	I		R
3145	<i>E. faecalis</i>	I	I	R	I	R	R	I	
3155	<i>E. faecalis</i>	R	I		R	R			
3232	<i>E. faecalis</i>		I	R	I	R	R		
3262	<i>E. faecium</i>	R		R		R			R

• Conclusions

The results of the present work confirmed that dairy enterococci might be a potential source for dissemination of antimicrobial resistances among bacteria in non-intensive Sicilian dairy farms.