Multidrug-resistant *Enterococcus faecalis* isolated from ornamental animals feed

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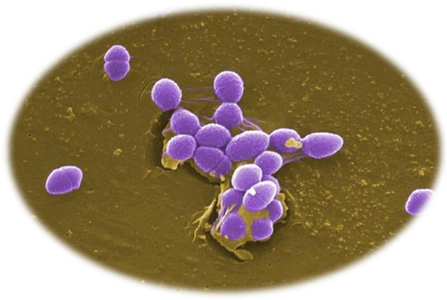
Introduction

***Enterococcus faecalis* is one of the species most strongly associated with cases of nosocomial infections (Arias and Murray, 2012). This pathogen is resistant to several antimicrobial classes, having an enormous capacity to acquire and transfer resistance genes (Aarestrup *et al.*, 2008). Antimicrobial resistance must be seen as a serious problem, with impact on wildlife, environment and especially on human health (Radhouani *et al.*, 2014).**

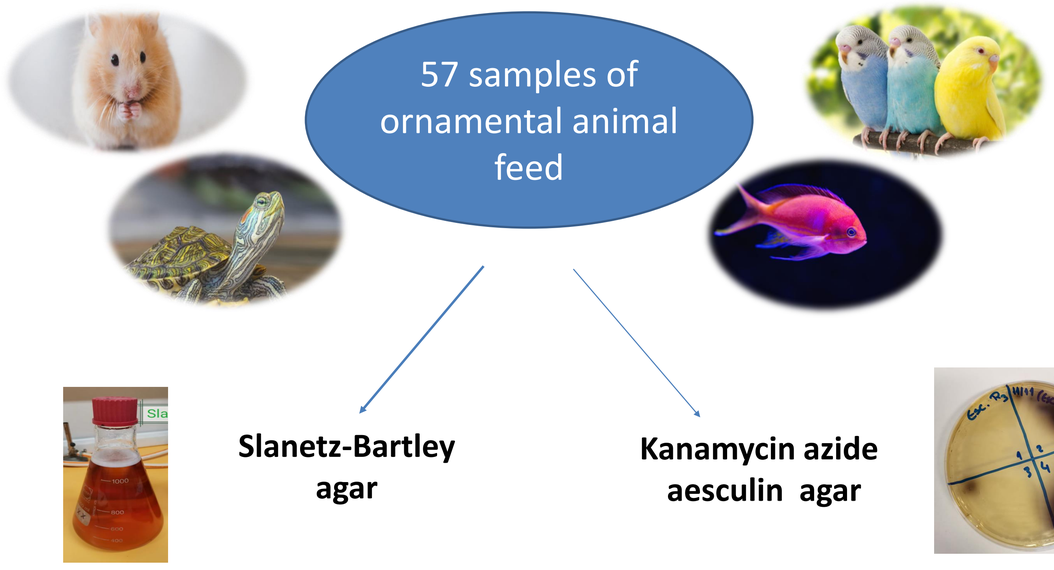
Ornamental animals can be reservoirs of antibiotic-resistant microorganisms and, due to close contact, they can transfer them to humans (Radhouani et al., 2014).

The objective of this work was to evaluate the level of antibiotic resistance *Enterococcus faecalis* isolates recovered from samples of food supplied to ornamental animals.



Materials and Methods

- **103 *E. faecalis* isolates** (recovered from 15 birds, 9 from fish and 4 from reptile feed samples), confirmed by standard biochemical tests.



- Antimicrobial susceptibility testing was performed using **14 antimicrobial agents** by the Kirby-Bauer disk diffusion method, according to the Clinical and Laboratory Standards Institute standards.

Results

Table 1. Resistance to different antimicrobial classes detected in *E. faecalis* isolates.

Antibiotic agent	Antimicrobial Class	Resistant isolates	
		Number	%
AMP	Penicilins	3	2.9
VA	Glycopeptides	3	2.9
TEC	Glycopeptides	3	2.9
TE	Tetracyclines	27	26.2
E	Macrolides	50	48.5
CIP	Fluoroquinolones	39	37.9
C	Phenicols	4	3.9
QD	Streptogramins	103	100*
F	Nitrofurantoins	19	18.4
RD	Ansamycins	80	77.7
FOS	Fosfoycins	7	6.8
CN	Aminoglicosides	0	0
S	Aminoglicosides	0	0
LNZ	Oxazolidinones	20	19.4

AMP – Ampicilin; VA – Vancomycin; TEC – Teicoplanin; TE – Tetracycline; E – Erythromycin; CIP – Ciprofloxacin; C – Chloramphenicol; QD – Quinupristin/ dalfopristin; F – Nitrofurantoin; RD – Rifampicin; FOS – Fosfomycin; CN – Gentamicin; S – Streptomycin; LNZ – Linezolid. *: intrinsic resistance.

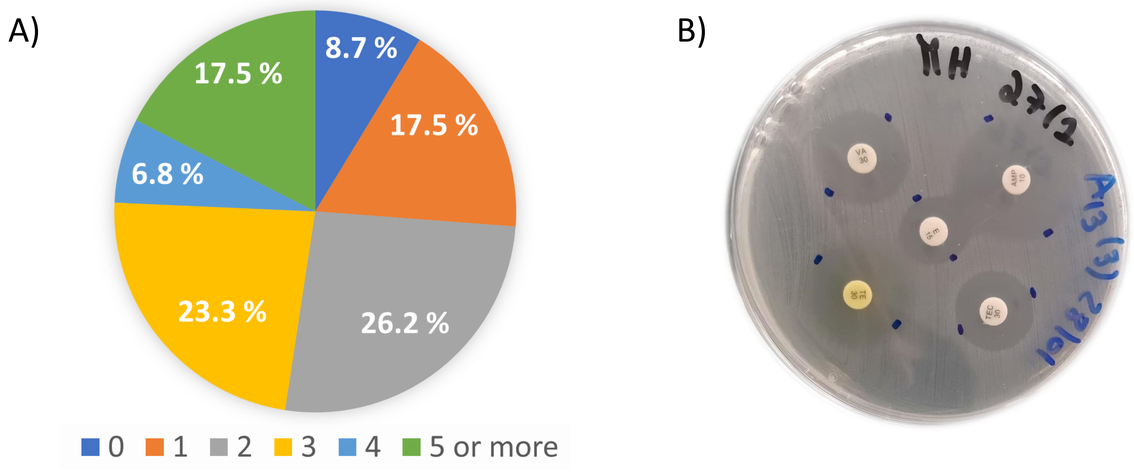


Figure 1. Percentage of the Enterococci isolates that showed resistance to antimicrobial classes analyzed in this study (A). Example of the bird sample resistant to Erythromycin (B).

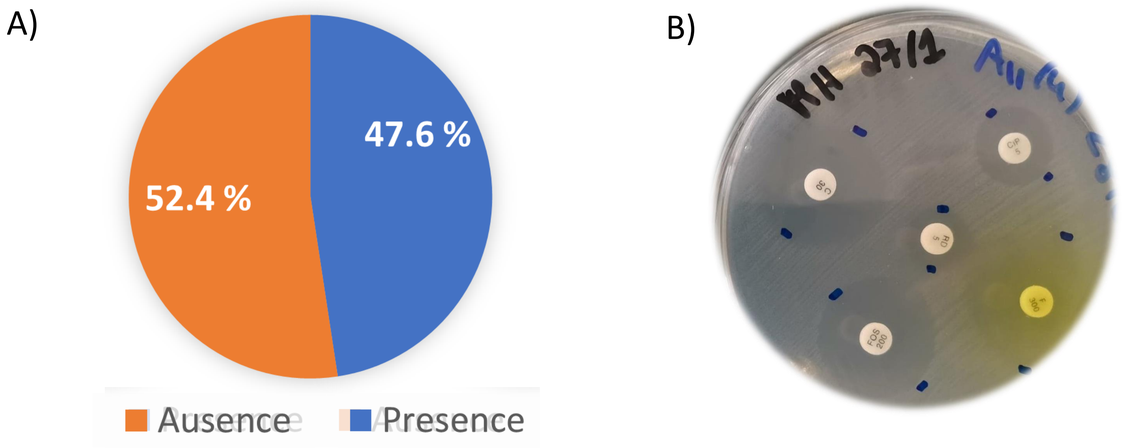


Figure 2. Percentage of the isolates with or no multidrug resistance (≥3 antibiotic classes) obtained in this study (A). Bird sample with resistance to Ciprofloxacin and Rifampicin (B).

Conclusion

In conclusion, these results indicated a significant presence of *E. faecalis* in the feeding of ornamental animals, as well as, multidrug-resistant isolates, becoming a public health problem given the proximity and interaction of humans with these animals.

References

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