

Isolation and characterization of *Enterococcus* spp. from animals and related settings: surveillance for antimicrobial resistance

Daniel Pinto^{1,2}, Joana Monteiro Marques^{*1,2}, Maria Teresa Barreto-Crespo^{3,4}, Teresa Semedo-Lemsaddek^{*1,2}

1: Centre for Interdisciplinary Research in Animal Health (CIISA), Faculty of Veterinary Medicine, University of Lisbon. Av. Universidade Técnica, 1300-477 Lisboa e-mail: {daniel.fs.pinto@tecnico.ulisboa.pt; jmarques@fmv.ulisboa.pt; tcrespo@ibet.pt; tlemsaddek@fmv.ulisboa.pt}, web: https://ciisa.fmv.ulisboa.pt/en/.

2: Associate Laboratory for Animal and Veterinary Sciences (AL4AnimalS), Portugal.

3: iBET - Institute of Experimental Biology and Technology, PO box 12, 2781-901 Oeiras, Portugal.

4: ITQB NOVA – Instituto de Tecnologia Química e Biológica António Xavier, Universidade Nova de Lisboa, Avenida da República, 2780-157 Oeiras, Portugal.

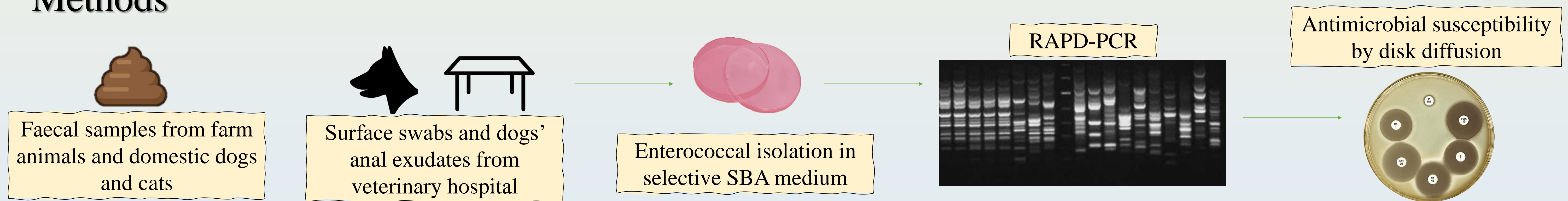
e-mail: tcrespo@ibet.pt

* Equal contributors to the work.

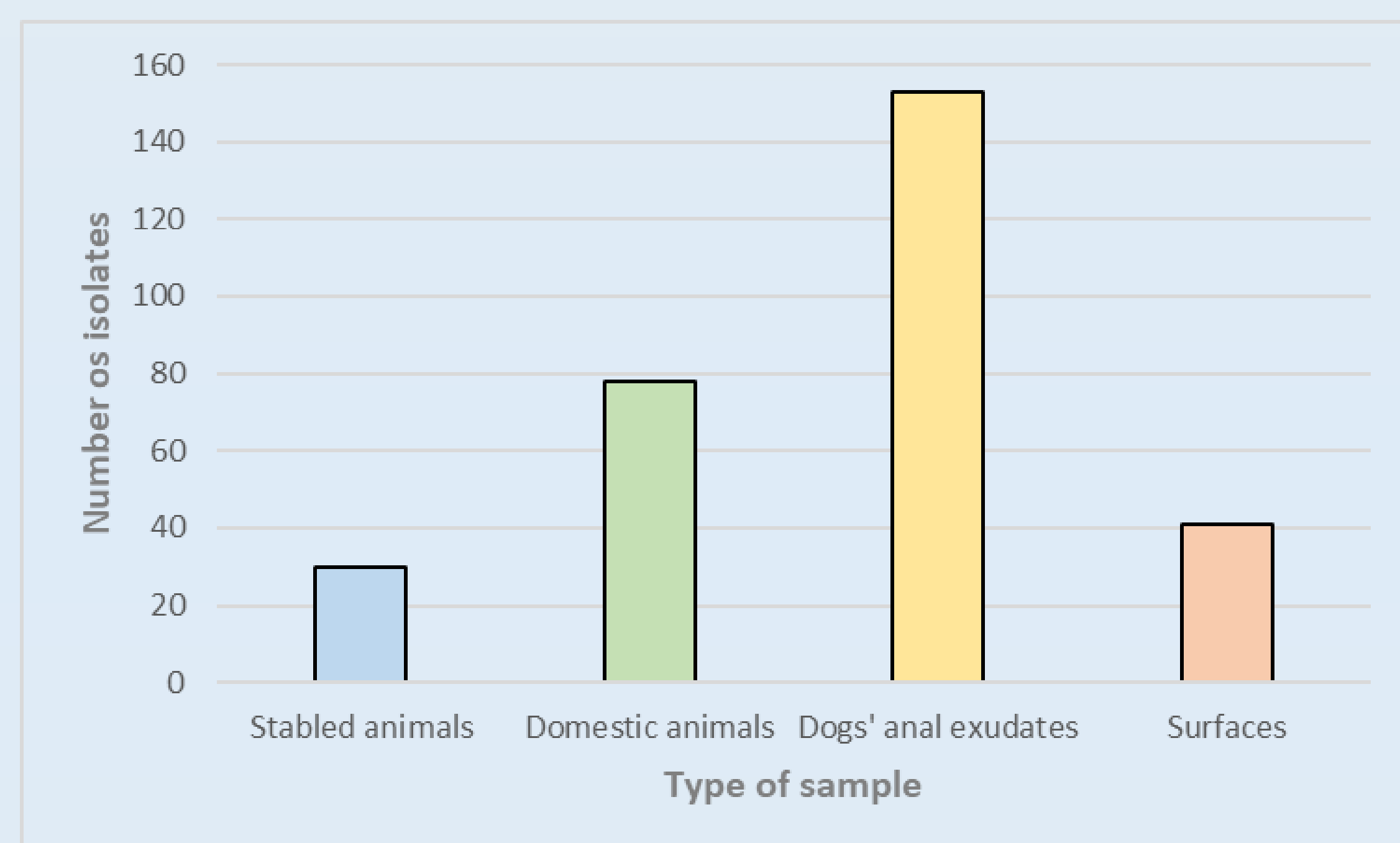
Introduction

Enterococcus spp. are ubiquitous bacteria that inhabit the normal intestinal microbiota of most animals and are widespread in the environment. Enterococci have emerged as opportunistic pathogens, due to rapid adaptation features and ability to acquire virulence and antibiotic resistance genes. Considering the low numbers of investigations on the characterization of enterococcal isolates from animals and animal-related samples, the goal of the present study was to isolate enterococci from those settings and evaluate the associated antibiotic susceptibility.

Methods



Results and Conclusion



Enterococcal isolates were recovered in all samplings performed as shown in Figure 1, confirming their presence in the gastrointestinal tracts of most animals and their widespread environmental distribution. Colonies were isolated from horses, cows and goats (farm animals) and from dogs and cats (domestic animals and dogs' anal exudates). Enterococci from hospital surfaces were recovered mainly from waiting room chairs, tickets' machine and dogs' scale

Figure 1 – Number of enterococcal isolates obtained from each type of sample

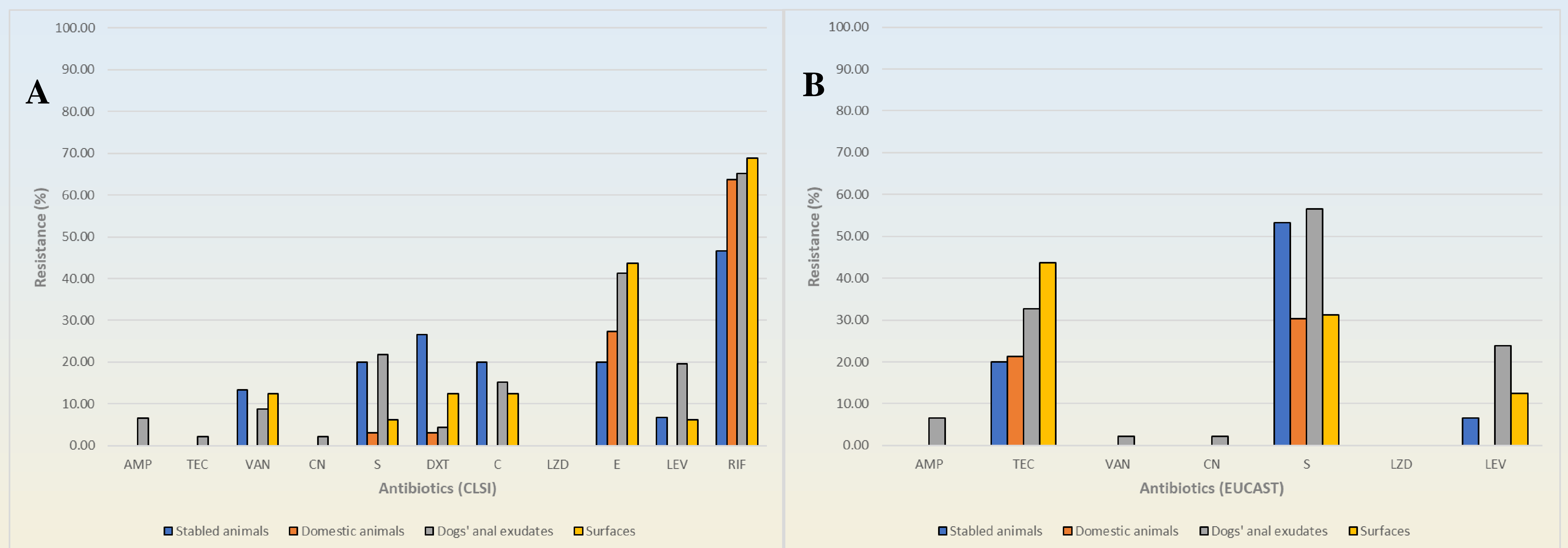


Figure 2 – Resistance profiles for stabled animals, domestic animals, dogs' anal exudates and surfaces according to CLSI (A) and EUCAST (B) breakpoints. AMP: Ampicillin; TEC: Teicoplanin; VAN: Vancomycin; CN: Gentamicin; S: Streptomycin; DXT: Doxycycline; C: Chloramphenicol; LZD: Linezolid; E: Erythromycin; LEV: Levofloxacin; RIF: Rifampicin

RAPD-pattern analysis and dendrogram construction allowed the selection of 110 genomically distinct representative isolates, further characterized for antimicrobial susceptibility. Results are represented in Figure 2A/B where 76.4% were resistant at least to one antibiotic, according to CLSI, and 55.5% according to EUCAST. Most enterococci recovered from stabled animals, and some from domestic dogs/cats, were susceptible to all tested antibiotics. 7.3% were considered MDR according to CLSI and 6.4% according to EUCAST with the majority recovered from dogs' anal exudates. Overall, this work reinforces enterococcal widespread distribution with resistance phenotypes disseminating among distinct sample sources, which rises the potential transmission of strains with resistance features between humans and animals

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