

# Enterococcus faecalis Antimicrobial Resistance

## to antibiotics of high public health risk in Spanish laying hens farms in 2018



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### INTRODUCTION.

Antimicrobial Resistance (AMR) is a global threat for human and animal health. The transmission of genes and bacterial strains resistant to antibiotics (AB) between animals and humans plays an important role regarding AMR emergence. Few studies have been carried out in commensal bacteria circulating in laying hens regarding AMR profiles (1).

### OBJECTIVES.

- To evaluate the AMR profile of commensal *Enterococcus faecalis* strains in laying hens farms in Spain regarding AB of high public health risk.
- To quantify the partial multiresistance profile to AB of A and B EMA categories in commensal *E. faecalis* strains.



### MATERIALS & METHODS.

- 39 laying hens farms located in 12 provinces of 6 Spanish regions (Fig. 1) were sampled during the 40-50 laying weeks (2) from April to November 2018.
- 195 *E. faecalis* commensal strains were isolated using KF streptococcus agar (Thermo Scientific™ CM0701B) medium and PCR confirmation.
- MIC testing was carried out using the Sensitre™ system (Thermo Fisher).
- EUCAST guidelines were followed to test 7 AB (3) (Fig. 2). EMA Classification (4) Category A ("Avoid"): Glycylcyclines (Tigecycline, TIG); Glycopeptides (Vancomycin, VAN; Teicoplanin, TEI); Lipopeptides (Daptomycin, DAP); Oxazolidinones (Linezolid, LIN); Streptogramins (Quinupristin-dalfopristin, QUD); Category B ("Restrict"): Quinolones (Ciprofloxacin, CIP).
- ECOFF reference values were considered (3).



Figure 1. Spanish provinces where samples were collected.

### RESULTS.

- High levels of resistance to AB of high public health importance were found, especially to Tigecycline (42,56%) (Fig. 2).
- *E. faecalis* are intrinsically resistant to Quinupristin-dalfopristin (93,33%) (Fig. 2).
- Multiresistance profiles to several AB families were determined (Fig.3). Resistance to Streptogramins and Glycylcyclines were the most frequently associated findings.

Figure 2. Resistant *Enterococcus faecalis* strains to the 7 AB tested.

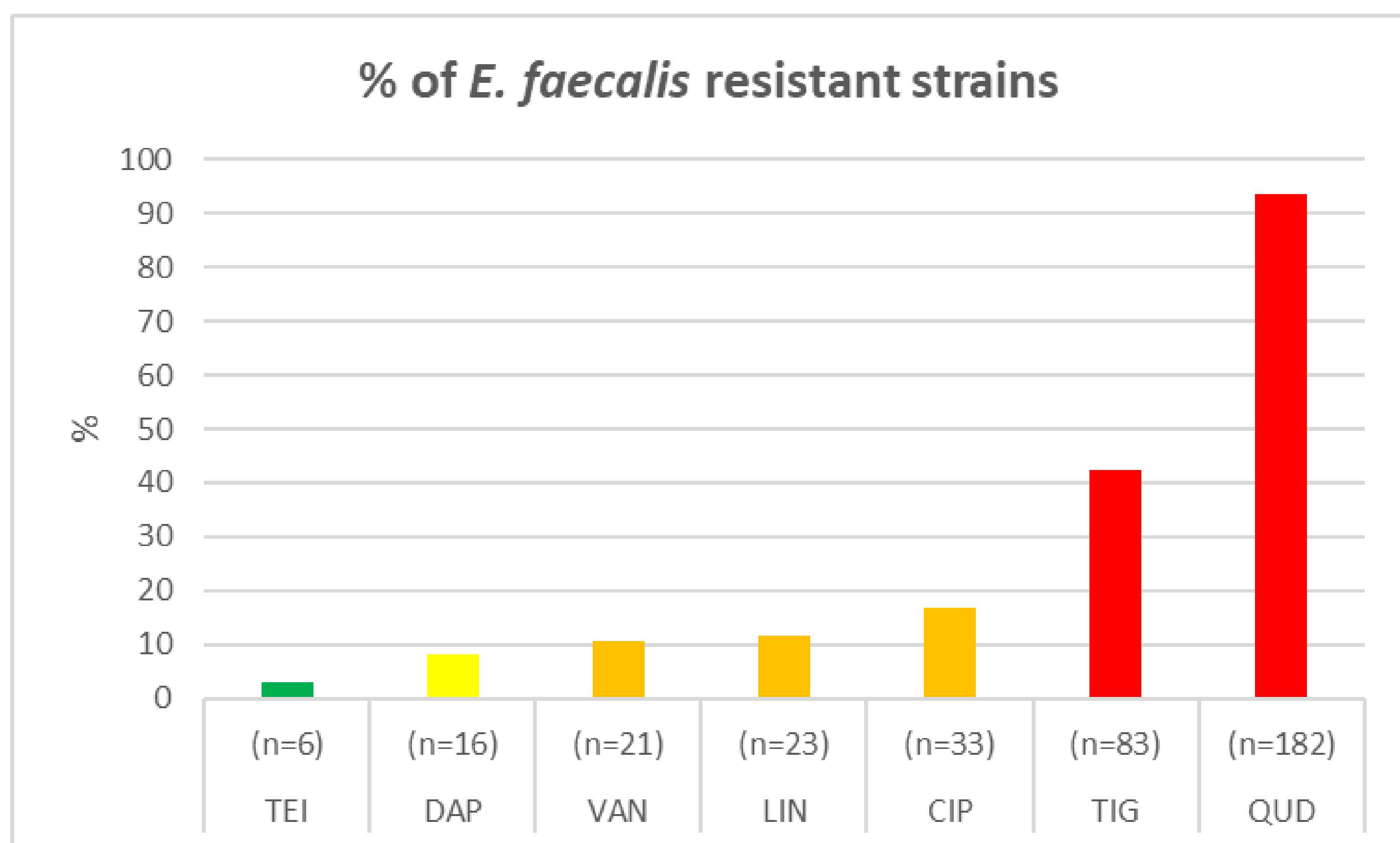
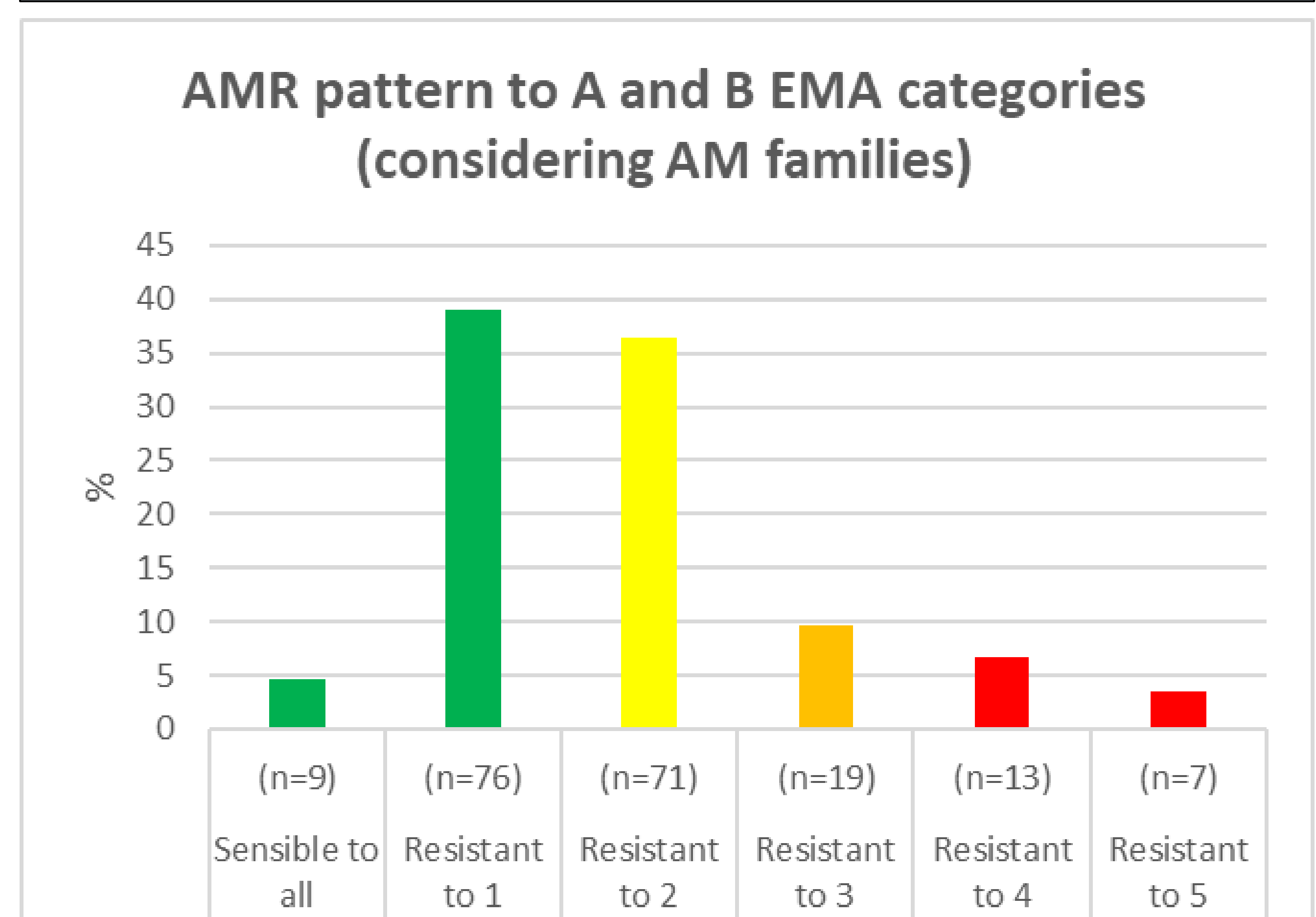


Figure 3. Partial resistance profiles of *Enterococcus faecalis*.



### CONCLUSIONS.

- Laying hens can be a source of commensal *E. faecalis* resistant to AB of A and B EMA categories, including multiresistant bacterial strains.
- Specific measures against AMR emergence in laying hens and extensive AMR investigations are required. There is a need to increase surveillance and application of preventive measures against AMR in laying hens.
- A more specific surveillance system should be implemented to effectively monitor AMR in laying hens.

### REFERENCES.

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