

ANTIBIOTIC SUSCEPTIBILITY OF METRONIDAZOLE-SUSCEPTIBLE AND METRONIDAZOLE-(HETERO)RESISTANT *C. difficile* RT078/126 ISOLATES

FROM SPAIN

B. Aneja, S. Álvarez-Pérez, J.L. Blanco, M.E. García.*
Animal Health Department. Veterinary Medicine Faculty.
University Complutense. Madrid. Spain. Email: jlblanco@ucm.es



INTRODUCTION

The toxigenic and hypervirulent **PCR ribotype complex 078/126** (RT078/126) ranks among the most common genotypes of *Clostridioides difficile* (CD) involved in human disease worldwide. RT078/126 is also frequently isolated from animals, food products and the environment, which has encouraged discussion about the ‘**One Health**’ nature of this ribotype complex. Notably, RT078/126 isolates often show resistance to multiple antibiotics, including **metronidazole** (MTZ). However, the relationship between MTZ-(hetero)resistance and susceptibility/resistance to other antibiotic compounds remains unclear.

OBJECTIVE

We reanalyzed the **antibiotic susceptibility profiles** (determined by the Etest method) and genotype data (ribotypes and AFLP types) of 96 RT078/126 CD isolates, 50 of human and 46 of animal origin, obtained in Spain [1].

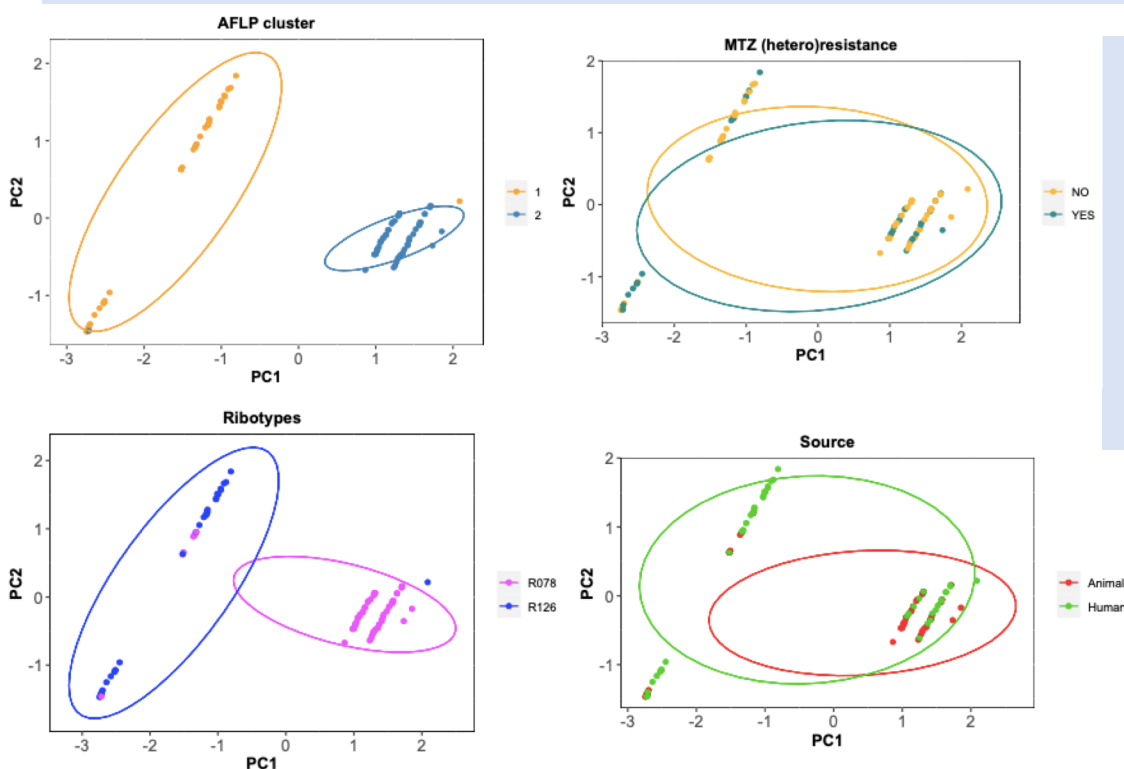
RESULTS

Principal component analysis (PCA) of log transformed **minimum inhibitory concentrations** (MICs) to clindamycin, ertapenem, erythromycin, levofloxacin, linezolid, moxifloxacin, rifampicin, tetracycline, tigecycline and vancomycin, revealed **clustering of isolates according to their ribotype and AFLP genotypes**, but not according to their source of origin and susceptibility/(hetero)resistance to MTZ (Fig.1). The lack of association between MTZ resistance and the susceptibility profiles to other compounds was confirmed after **k-means clustering** ($k = 3$) of the *in vitro* susceptibility data ($P = 1$). In contrast, a statistically **significant link** was found between the results of the **unsupervised classification and the ribotypes, AFLP groups** [1] and the source of isolates ($P < 0.001$ in all cases). Finally, MTZ MICs were weakly correlated to the MICs obtained for tigecycline (Spearman’s $\rho = 0.411$, $P = 0.002$), but not to those of other tested compounds.

CONCLUSIONS

At least for the set of CD RT078/126 isolates under study, there is **no link between MTZ-(hetero)resistance and the susceptibility to other antibiotic compounds.**

Fig.1. PCA of MICs data according to the AFLP cluster, MTZ (hetero) resistance, ribotype and source of isolates.



[1] Álvarez-Pérez S. et al. (2017) *Vet. Microbiol.* 199:15-22.