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Prevalence of Plasmid Mediated Quinolone Resistance Mechanisms (PMQR) in Argentina

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INTRODUCTION

The first PMQR (*qnrA*) was reported in 1998. Extra *qnr*-like genes, and two other PMQRs [*aac(6´)-Ib-cr* and *qepA*] have also been characterized. These mechanisms cause only low-level resistance. Due to the difficulties of the phenotypic detection of PMQR its real prevalence is underestimated. In a previous study, we evaluated the presence of PMQR in 105 clinical enterobacteria with resistance/decreased susceptibility to ciprofloxacin and we found the highest PMQR diversity in *Klebsiella* spp (KL), *Enterobacter* spp (EN), *Serratia* spp (SE) and *Citrobacter* spp (CI).

AIM: TO EVALUATE THE PREVALENCE OF PMQR IN NON-SELECTED ISOLATES OF KL, EN, SE AND CI.

METHODS

Hospital distribution

We studied 232 isolates of KL (144), EN (54), SE (19) and CI [8 *C. freundii* (CF) and 7 from other specie], consecutively recovered over a period of 5 days (2007) in 66 hospitals of WHONET-Argentina (Buenos Aires City and all Provinces, see map).

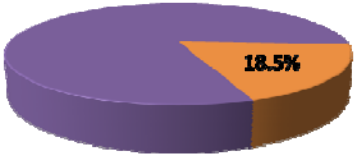
PMQR analysis: *qnrA, -B, -C, -D, -S* (PCR); *qepA* (PCR and dot blot), and *aac(6´)-Ib-cr* (allele-specific PCR). Different alleles of *qnrB* were identified by PCR-RFLP.

Genetic linkage to IS*CR1*: PCR cartography.

Detection of extended spectrum β-lactamases (ESBLs): was done by testing the synergy between cefotaxime/ceftazidime and clavulanic acid by disk diffusion.

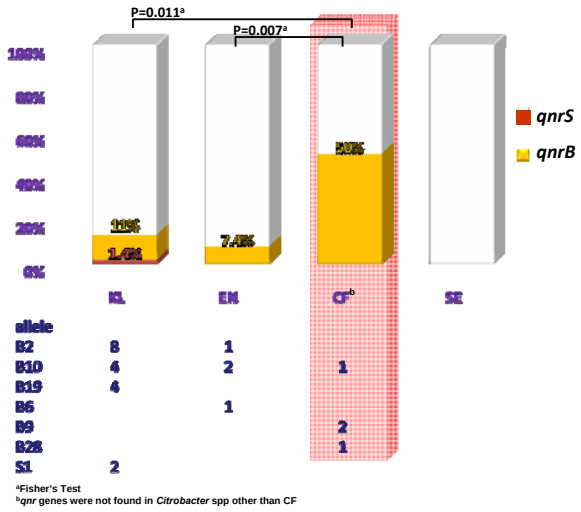
RESULTS

Prevalence of PMQR



8.6% *qnr*
7.3% *aac(6´)-Ib-cr*
2.6% *qnr* + *aac(6´)-Ib-cr*
qnrA, qnrC, qnrD and *qepA* were not detected.

qnr Distribution



allele	KL	EN	CF[b]	SE
B2	8	1		
B10	4	2	1	
B19	4			
B6		1		
B9			2	
B28			1	
S1	2			

[a]Fisher's Test
[b]*qnr* genes were not found in *Citrobacter* spp other than CF

Prevalence of *aac(6´)-Ib-cr*

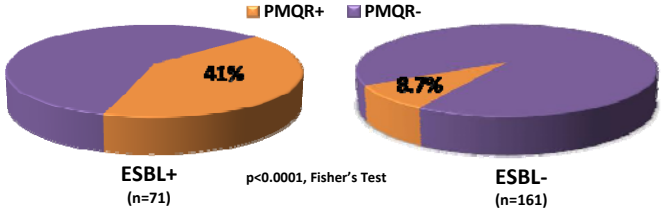
	aac(6´)-Ib-cr + (n)	Prevalence (%)
KL	17 (144)	11.8
EN	4 (54)	7.4
SE	1 (19)	5.3
CI	1 (15)	6.7

only associated to *qnrB10* y *-B2*

Hospital prevalence of PMQR

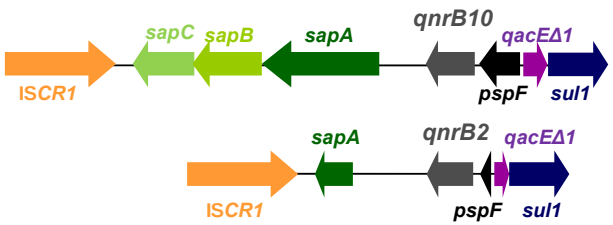
PMQR were detected in 25 centers, which include 12 Provinces and Buenos Aires City.

Correlation between PMQR and ESBL phenotype



Genetic Platforms

•The unique qnrB alleles genetically linked to ISCR1 were B2 and B10.



CONCLUSIONS

- This is the 1st study on PMQR prevalence in Argentina where they are broadly spread (38% of included centers).
- The main PMQR detected were qnrB and aac-6´(Ib)-cr.
- The high diversity and prevalence of qnrB genes in CF suggest that this specie may be a reservoir.
- ESBL expression was significantly associated to the presence of PMQR.