Molecular characterization of multidrug resistant *Enterobacterales* strains isolated from liver and kidney transplant recipients in Spain

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Supplementary Table 1. *In vitro* activity to 24 antimicrobials agents in 345 MDR-E isolated from kidney, liver or combined kidney/pancreas transplant recipients.

	All isolates (n=345)				***E. coli* (n=152)**				***K. pneumoniae* (n=121)**				***E. cloacae* (n=26)**				***C. freundii* (n=23)**				**Other MDR-E (n=23)**			
Antimicrobial agent	Resistant	MIC_{50} (mg/L)	MIC_{90} (mg/L)	Range (mg/L)	Resistant	MIC_{50} (mg/L)	MIC_{90} (mg/L)	Range (mg/L)	Resistant	MIC_{50} (mg/L)	MIC_{90} (mg/L)	Range (mg/L)	Resistant	MIC_{50} (mg/L)	MIC_{90} (mg/L)	Range (mg/L)	Resistant	MIC_{50} (mg/L)	MIC_{90} (mg/L)	Range (mg/L)	Resistant	MIC_{50} (mg/L)	MIC_{90} (mg/L)	Range (mg/L)
Amoxicillin	100.0	>256	>256	32- >256	100.0	>256	>256	128- >256	100.0	>256	>256	32- >256	100.0	>256	>256	128- >256	100.0	>256	>256	128- >256	100.0	>256	>256	128- >256
Amoxicillin-Clavulanic acid	85.2	128	>256	1- >256	71.1	32	>256	1- >256	96.7	>256	>256	4- >256	100.0	>256	>256	64- >256	95.7	128	>256	8- >256	91.3	>256	>256	4- >256
Piperacillin	98.6	>256	>256	2- >256	99.3	>256	>256	16- >256	100.0	>256	>256	32- >256	92.3	>256	>256	2- >256	100.0	256	>256	64- >256	91.3	>256	>256	8- >256
Piperacillin-Tazobactam	60.6	128	>256	≤0.125- >256	36.8	4	>256	≤0.125- >256	83.5	>256	>256	2- >256	80.8	256	>256	2- >256	60.9	64	>256	1- >256	69.6	128	>256	≤0.125- >256
Cefoxitin[a]	48.4	8	>256	1- >256	27.0	4	32	1- >256	51.2	16	128	1- >256	100.0	256	>256	16- >256	95.7	256	>256	4- >256	69.6	64	>256	2- >256
Cefotaxime	96.8	256	>256	≤0.125- >256	96.1	256	>256	≤0.125- >256	98.3	>256	>256	0.5- >256	96.2	128	>256	0.5- >256	100.0	64	256	4- >256	91.3	64	>256	1- >256
Ceftazidime	77.7	64	>256	≤0.125- >256	65.1	16	128	≤0.125- >256	93.4	128	>256	≤0.125- >256	69.2	64	>256	1- >256	87.0	128	>256	2- >256	82.6	64	>256	0.5- >256
Cefepime	66.7	128	>256	≤0.125- >256	66.4	32	>256	≤0.125- >256	89.3	>256	>256	≤0.125- >256	30.8	2	256	≤0.125- >256	13.0	2	16	≤0.125- >256	43.5	4	>256	≤0.125- >256
Aztreonam	82.3	64	>256	≤0.125- >256	81.6	32	256	≤0.125- >256	88.4	256	>256	≤0.125- >256	65.4	32	128	≤0.125- >256	91.3	32	256	≤0.125- >256	65.2	16	>256	≤0.125- >256
Imipenem	7.2	0.25	4	≤0.125- 256	3.9	≤0.125	0.5	≤0.125- 128	4.1	0.5	4	≤0.125- 256	7.7	0.25	4	≤0.125- 16	0.0	0.5	1	0.25- 1	13.0	1	8	≤0.125- 16
Meropenem	4.1	≤0.125	2	≤0.125- 256	0.7	≤0.125	≤0.125	≤0.125- 32	8.3	0.25	4	≤0.125- 256	3.8	≤0.125	4	≤0.125- 16	0.0	≤0.125	≤0.125	≤0.125- 0.25	4.3	≤0.125	8	≤0.125- 16
Ertapenem	25.8	≤0.125	8	≤0.125- >256	5.9	≤0.125	0.25	≤0.125- 16	52.9	2	16	≤0.125- >256	38.5	0.5	16	≤0.125- 128	8.7	0.25	0.5	≤0.125- 4	17.4	≤0.125	2	≤0.125- 8
Gentamicin	38.3	1	128	≤0.125- >256	25.0	0.5	64	≤0.125- >256	62.0	32	128	≤0.125 ->256	11.5	0.25	8	≤0.125- 128	26.1	0.5	64	≤0.125- 128	47.8	4	128	≤0.125- 256
Tobramycin	42.6	2	32	≤0.125- >256	27.6	0.5	32	≤0.125- >256	69.4	16	32	≤0.125- >256	11.5	0.5	16	≤0.125- 64	34.8	0.5	16	≤0.125- 64	47.8	4	32	≤0.125- 32
Amikacin	2.9	2	8	≤0.125- >256	2.6	2	4	≤0.125- >256	4.1	2	8	≤0.125- >256	0.0	1	2	≤0.125- 16	0.0	1	2	0.5- 16	0.0	1	8	0.25- 16
Netilmicin	37.7	1	32	≤0.125- >256	27.0	0.5	16	≤0.125- >256	58.7	8	16	≤0.125- >256	11.5	0.25	16	≤0.125- 32	26.1	0.25	32	≤0.125- 128	43.5	4	32	≤0.125- 256
Arbekacin	NA	0.5	2	≤0.125- >256	NA	0.5	2	≤0.125- >256	NA	1	4	≤0.125- >256	NA	0.25	1	≤0.125- >256	NA	0.25	2	≤0.125- 8	NA	1	4	≤0.125- 16
Nalidixic acid	NA	>256	>256	1- >256	NA	>256	>256	1- >256	NA	>256	>256	2- >256	NA	4	>256	2- >256	NA	16	>256	2- >256	NA	128	>256	2- >256
Ciprofloxacin	66.7	16	>256	≤0.125- >256	66.4	16	>256	≤0.125- >256	85.1	64	>256	≤0.125- >256	19.2	≤0.125	16	≤0.125- 64	43.5	0.5	32	≤0.125- 64	73.9	16	>256	≤0.125- >256
Levofloxacin	63.2	8	64	≤0.125- >256	88.2	16	>256	0.25- >256	76.9	8	64	≤0.125- >256	19.2	8	4	≤0.125- >256	43.5	0.5	32	≤0.125- 64	52.2	8	>256	≤0.125- >256
Trimethoprim-Sulfamethoxazole	71.9	>256	>256	≤0.125- >256	71.7	>256	>256	≤0.125- >256	84.3	>256	>256	≤0.125- >256	38.5	0.5	>256	≤0.125- >256	52.2	128	>256	≤0.125- >256	69.6	256	>256	≤0.125- >256
Tigecycline	54.8	1	16	≤0.125- >256	38.2	0.5	8	≤0.125- >256	73.6	2	16	≤0.125- >256	69.2	1	16	≤0.125- >256	13.0	0.5	8	≤0.125- 32	60.9	2	16	≤0.125- 64
Fosfomycin	38.6	16	>256	≤0.125- >256	9.2	4	32	≤0.125- >256	70.2	128	>256	≤0.125- >256	53.8	64	128	≤0.125- >256	26.1	4	>256	0.5- >256	65.2	64	>256	2- >256
Colistin	7.5	≤0.125	1	≤0.125- >256	0.7	≤0.125	0.5	≤0.125- 8	10.7	≤0.125	2	≤0.125- >256	15.4	≤0.125	256	≤0.125- >256	0.0	≤0.125	0.25	≤0.125- 2	34.8	≤0.125	>256	≤0.125- >256

[a] For cefoxitin, the EUCAST ECOFF (>8 mg/L) was used.

NA. Not available (breakpoints have not been established by EUCAST)

Supplementary Table 2. Primers used in the detection of antimicrobial resistance genes and expected amplicon sizes.

Resistance	**Gene**	**DNA sequence (5´–3´)**	**Amplicon size (bp)**	**Annealing temperature (ºC)**	**Reference**
β-lactams	*bla*$_{TEM}$	ATGAGTATTCAACATTTCCG	867	55	[1]
		CTGACAGTTACCAATGCTTA			
	bla$_{SHV}$	GGGTTATTCTTATTTGTCGC	930	55	[1]
		TTAGCGTTGCCAGTGCTC			
Cephalosporins	*bla*$_{CTXM}$	ATGTGCAGYACCAGTAARGT	593	55	[2]
		TGGGTRAARTARGTSACCAGA			
	bla$_{CTXM-group1}$	ATGGTTAAAAAATCACTGCG	912	55	[3]
		TTACAAACCGTCGGTGAC			
	bla$_{CTXM-group9}$	ATGGTGACAAAGAGAGTGCAAC	876	55	[3]
		TTACAGCCCTTCGGCGATG			
	bla$_{CTXM-group8}$	TCGCGTTAAGCGGATGATGC	666	55	[4]
		AACCCACGATGTGGGTAGC			
Cephamycinases	*bla*$_{ACC}$	AACAGCCTCAGCAGCCGGTTA	346	64	[5]
		TTCGCCGCAATCATCCCTAGC			
	bla$_{CIT}$	TGGCCAGAACTGACAGGCAAA	462		[5]
		TTTCTCCTGAACGTGGCTGGC			
	bla$_{DHA}$	AACTTTCACAGGTGTGCTGGGT	405		[5]
		CCGTACGCATACTGGCTTTGC			
	bla$_{MOX}$	GCTGCTCAAGGAGCACAGGAT	520		[5]
		CACATTGACATAGGTGTGGTGC			
	bla$_{EBC}$	TCGGTAAAGCCGATGTTGCGG	302		[5]
		CTTCCACTGCGGCTGCCAGTT			
	bla$_{FOX}$	AACATGGGGTATCAGGGAGATG	190		[5]
		CAAAGCGCGTAACCGGATTGG			
Carbapenems	*bla*$_{OXA-48}$	TGCGTGTATTAGCCTTATCG	784	60	[6]
		TTTTTCCTGTTTGAGCACTTC			
	bla$_{IMP}$	GAAGGCGTTTATGTTCATAC	586	55	[7]
		GTAAGTTTCAAGAGTGATGC			
	bla$_{KPC}$	CATTCAAGGGCTTTCTTGCTGC	538	60	[8]
		ACGACGGCATAGTCATTTGC			
	bla$_{NDM}$	CCATGCGGGCCGTATGAGTGATTG	700	60	[9]
		TCGCGAAGCTGAGCACCGCATTAG			
	bla$_{VIM}$	ATGGTGTTTGGTCGCATATC	510	60	[10]
		TGGGCCATTCAGCCAGATC			

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