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Rapid Detection of Ceftazidime/Avibactam Susceptibility/Resistance in Enterobacterales by Rapid CAZ/AVI NP Test

Appendix.

Appendix Table. Rapid CZA NP test for detection of CAZ/AVI susceptibility/resistance in Enterobacterales

Strain	Species	Major β -lactam resistance determinants*	Phenotype†	MIC values of CAZ/AVI $\mu\text{g/mL}$ ‡	Rapid CAZ/AVI NP test	
					Result	Discrepancy with MIC CAZ/AVI result§
3001	<i>Klebsiella pneumoniae</i>	KPC-2, VEB-25, OXA-10	R	128	Positive	-
3002	<i>Escherichia coli</i> Top10	pTOPO-VEB-25	R	128	Positive	-
3003	<i>Escherichia coli</i> Top10	pVEB-25_IncC	R	64	Positive	-
3004	<i>Klebsiella pneumoniae</i>	KPC-3 (D179Y)	R	48	Positive	-
3005	<i>Klebsiella pneumoniae</i>	KPC-3 (G168N E169H)	R	64	Positive	-
3006	<i>Klebsiella pneumoniae</i>	KPC-3 (E169P L172T)	R	96	Positive	-
3007	<i>Klebsiella pneumoniae</i>	KPC-41	R	>256	Positive	-
3008	<i>Klebsiella pneumoniae</i>	KPC-50	R	>256	Positive	-
3009	<i>Escherichia coli</i>	VIM-1	R	24	Positive	-
3010	<i>Klebsiella pneumoniae</i>	VIM-1	R	24	Positive	-
3011	<i>Enterobacter cloacae</i>	VIM-1	R	48	Positive	-
3012	<i>Klebsiella pneumoniae</i>	VIM-1	R	>256	Positive	-
3013	<i>Enterobacter cloacae</i>	VIM-1	R	>256	Positive	-
3014	<i>Citrobacter freundii</i>	VIM-2	R	12	Positive	-
3015	<i>Proteus mirabilis</i>	VIM-4	R	24	Positive	-
3016	<i>Klebsiella pneumoniae</i>	VIM-19	R	24	Positive	-
3017	<i>Klebsiella pneumoniae</i>	VIM-19	R	24	Positive	-
3018	<i>Escherichia coli</i>	IMP-1	R	128	Positive	-
3019	<i>Klebsiella pneumoniae</i>	IMP-1	R	>256	Positive	-

Strain	Species	Major β -lactam resistance determinants*	Phenotype†	MIC values of CAZ/AVI $\mu\text{g/mL}$ ‡	Rapid CAZ/AVI NP test	
					Result	Discrepancy with MIC CAZ/AVI result§
3020	<i>Klebsiella pneumoniae</i>	NDM-1	R	>256	Positive	-
3021	<i>Escherichia coli</i>	NDM-1	R	>256	Positive	-
3022	<i>Escherichia coli</i>	NDM-1	R	>256	Positive	-
3023	<i>Escherichia coli</i>	NDM-1	R	>256	Positive	-
3024	<i>Escherichia coli</i>	NDM-1	R	>256	Positive	-
3025	<i>Providencia stuartii</i>	NDM-1	R	>256	Positive	-
3026	<i>Proteus mirabilis</i>	NDM-1	R	>256	Positive	-
3027	<i>Escherichia coli</i>	NDM-4	R	>256	Positive	-
3028	<i>Escherichia coli</i>	NDM-4	R	>256	Positive	-
3029	<i>Escherichia coli</i>	NDM-4	R	>256	Positive	-
3030	<i>Escherichia coli</i>	NDM-5	R	>256	Positive	-
3031	<i>Escherichia coli</i>	NDM-5	R	>256	Positive	-
3032	<i>Escherichia coli</i>	NDM-5	R	>256	Positive	-
3033	<i>Escherichia coli</i>	NDM-6	R	>256	Positive	-
3034	<i>Escherichia coli</i>	NDM-7	R	>256	Positive	-
3035	<i>Enterobacter cloacae</i>	NDM-7	R	>256	Positive	-
3036	<i>Escherichia coli</i>	Top10	S	0.25	Negative	-
3037	<i>Escherichia coli</i>	ATCC 25922	S	0.125	Negative	-
3038	<i>Escherichia coli</i>	Wild type	S	0.125	Negative	-
3039	<i>Escherichia coli</i>	TEM-1	S	0.19	Negative	-
3040	<i>Escherichia coli</i>	TEM-24	S	1	Negative	-
3041	<i>Escherichia coli</i>	TEM-29	S	0.25	Negative	-
3042	<i>Klebsiella pneumoniae</i>	SHV-1	S	0.094	Negative	-
3043	<i>Klebsiella pneumoniae</i>	SHV-2a	S	0.38	Negative	-
3044	<i>Klebsiella pneumoniae</i>	SHV-5	S	0.5	Negative	-
3045	<i>Klebsiella pneumoniae</i>	SHV-11	S	1	Negative	-
3046	<i>Escherichia coli</i>	SHV-12	S	0.75	Negative	-
3047	<i>Klebsiella pneumoniae</i>	SHV-38	S	0.75	Negative	-
3048	<i>Klebsiella pneumoniae</i>	CTX-M-2	S	2	Negative	-
3049	<i>Escherichia coli</i>	CTX-M-9	S	0.25	Negative	-
3050	<i>Escherichia coli</i>	CTX-M-15	S	0.125	Negative	-
3051	<i>Enterobacter cloacae</i>	CTX-M-15	S	0.38	Negative	-
3052	<i>Klebsiella pneumoniae</i>	CTX-M-37	S	0.125	Negative	-
3053	<i>Escherichia coli</i>	OXA-1	S	0.125	Negative	-
3054	<i>Escherichia coli</i>	VEB-1	S	0.75	Negative	-
3055	<i>Klebsiella pneumoniae</i>	VEB-1	S	0.75	Negative	-
3056	<i>Klebsiella pneumoniae</i>	GES-1	S	0.5	Negative	-
3057	<i>Enterobacter cloacae</i>	GES-5	S	2	Negative	-
3058	<i>Enterobacter cloacae</i>	GES-5	S	2	Negative	-
3059	<i>Enterobacter cloacae</i>	Hyperproduction AmpC	S	0.75	Negative	-
3060	<i>Escherichia coli</i>	DHA-1	S	0.094	Negative	-
3061	<i>Klebsiella pneumoniae</i>	DHA-2	S	0.38	Negative	-
3062	<i>Escherichia coli</i>	LAT-4	S	0.75	Negative	-
3063	<i>Escherichia coli</i>	ACC-1	S	0.5	Negative	-
3064	<i>Citrobacter freundii</i>	KPC-2	S	0.75	Negative	-
3065	<i>Enterobacter cloacae</i>	KPC-2	S	0.5	Negative	-

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					Result	Discrepancy with MIC CAZ/AVI result§
3066	<i>Klebsiella pneumoniae</i>	KPC-2	S	1.5	Negative	-
3067	<i>Klebsiella pneumoniae</i>	KPC-2	S	1.5	Negative	-
3068	<i>Klebsiella pneumoniae</i>	KPC-2	S	1	Negative	-
3069	<i>Klebsiella pneumoniae</i>	KPC-2	S	0.75	Negative	-
3070	<i>Klebsiella pneumoniae</i>	KPC-2	S	0.75	Negative	-
3071	<i>Klebsiella pneumoniae</i>	KPC-2	S	0.5	Negative	-
3072	<i>Klebsiella pneumoniae</i>	KPC-2	S	1.5	Negative	-
3073	<i>Klebsiella pneumoniae</i>	KPC-3	S	2	Negative	-
3074	<i>Klebsiella pneumoniae</i>	KPC-3	S	4	Negative	-
3075	<i>Klebsiella pneumoniae</i>	KPC-3	S	2	Negative	-
3076	<i>Klebsiella oxytoca</i>	KPC-3	S	1.5	Negative	-
3077	<i>Klebsiella oxytoca</i>	KPC-3	S	0.25	Negative	-
3078	<i>Klebsiella aerogenes</i>	KPC-3	S	0.38	Negative	-
3079	<i>Enterobacter cloacae</i>	KPC-3	S	3	Negative	-
3080	<i>Klebsiella pneumoniae</i>	KPC-11	S	1.5	Negative	-
3081	<i>Enterobacter cloacae</i>	IMI-1	S	0.125	Negative	-
3082	<i>Klebsiella pneumoniae</i>	OXA-48	S	0.38	Negative	-
3083	<i>Escherichia coli</i>	OXA-48	S	0.125	Negative	-
3084	<i>Klebsiella oxytoca</i>	OXA-48	S	0.19	Negative	-
3085	<i>Klebsiella oxytoca</i>	OXA-48	S	0.125	Negative	-
3086	<i>Enterobacter cloacae</i>	OXA-48	S	0.064	Negative	-
3087	<i>Enterobacter cloacae</i>	OXA-48	S	0.38	Negative	-
3088	<i>Citrobacter koseri</i>	OXA-48	S	0.19	Negative	-
3089	<i>Citrobacter freundii</i>	OXA-48	S	0.064	Negative	-
3090	<i>Hafnia alvei</i>	OXA-48	S	0.5	Negative	-
3091	<i>Morganella morganii</i>	OXA-48	S	0.047	Negative	-
3092	<i>Klebsiella pneumoniae</i>	OXA-162	S	0.5	Negative	-
3093	<i>Escherichia coli</i>	OXA-181	S	8	False positive	Yes
3094	<i>Escherichia coli</i>	OXA-181	S	0.125	Negative	-
3095	<i>Klebsiella pneumoniae</i>	OXA-181	S	2	Negative	-
3096	<i>Citrobacter freundii</i>	OXA-181	S	0.5	Negative	-
3097	<i>Enterobacter cloacae</i>	OXA-181	S	0.38	Negative	-
3098	<i>Enterobacter cloacae</i>	OXA-204	S	0.125	Negative	-
3099	<i>Escherichia coli</i>	OXA-204	S	0.38	Negative	-
3100	<i>Escherichia coli</i>	OXA-244	S	0.38	Negative	-
3101	<i>Escherichia coli</i>	OXA-244	S	0.125	Negative	-

Strain	Species	Major β -lactam resistance déterminants*	Phenotype†	MIC values of CAZ/AVI $\mu\text{g/mL}$ ‡	Rapid CAZ/AVI NP test	
					Result	Discrepancy with MIC CAZ/AVI result§

*Only the major resistance déterminants are indicated. WT, wild type.

†S, susceptible; R, resistant.

‡Results were interpreted according to the latest EUCAST breakpoints. Isolates were categorized as susceptible when MICs of CAZ/AVI were ≤ 8 $\mu\text{g/mL}$ and resistant when MICs were > 8 $\mu\text{g/mL}$. The reference strain *E. coli* ATCC 25922 was used as quality control for all testing.

§-, no discrepancy.