

Supporting Information

Metabolomics method in understanding and sensitizing carbapenem-resistant *Acinetobacter baumannii* to meropenem

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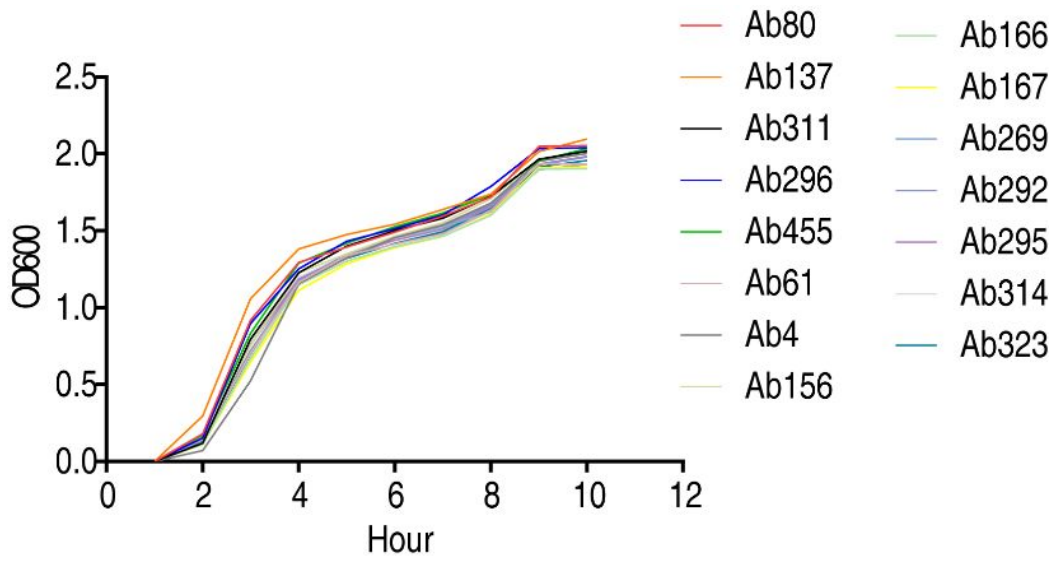


Figure S1. Growth curves of the bacteria

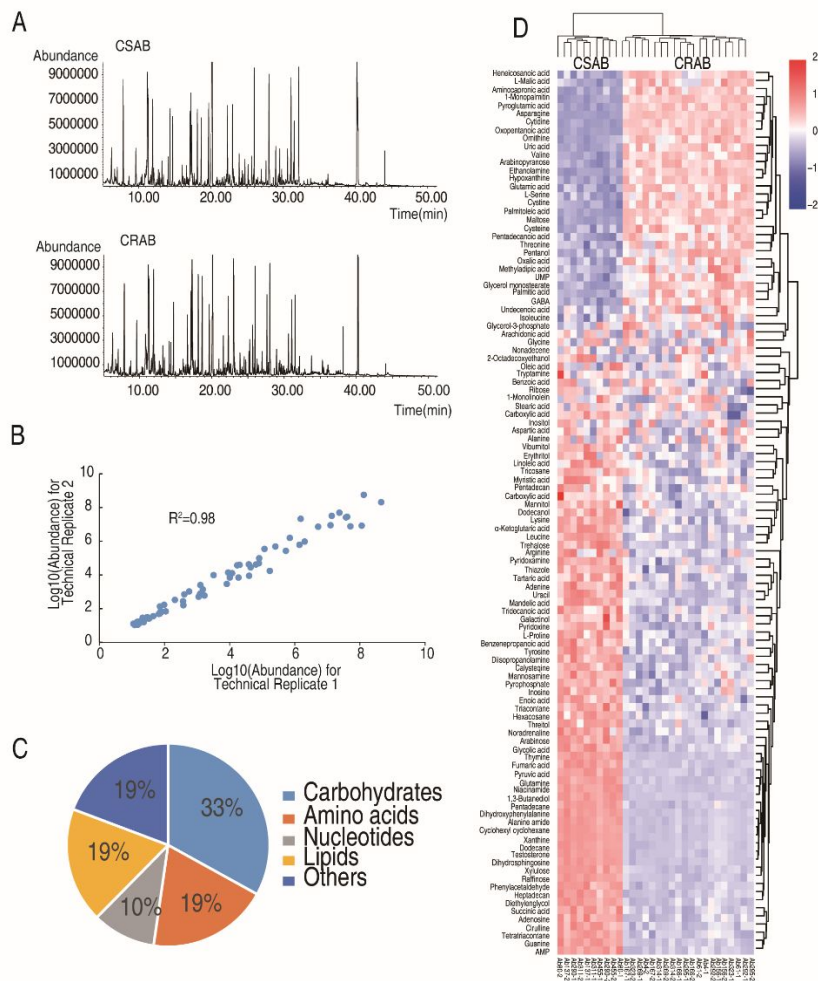


Figure S2. Metabolic profile of clinically isolated CSAB and CRAB.

(A) The ion chromatogram of total metabolites.

(B) Correlation coefficient between technical replicates.

(C) Categories of the metabolites identified in clinically isolated *A. baumannii*.

(D) Heat map of the 109 identified metabolites (row), blue and red colors represent low to high abundance (see color scale).

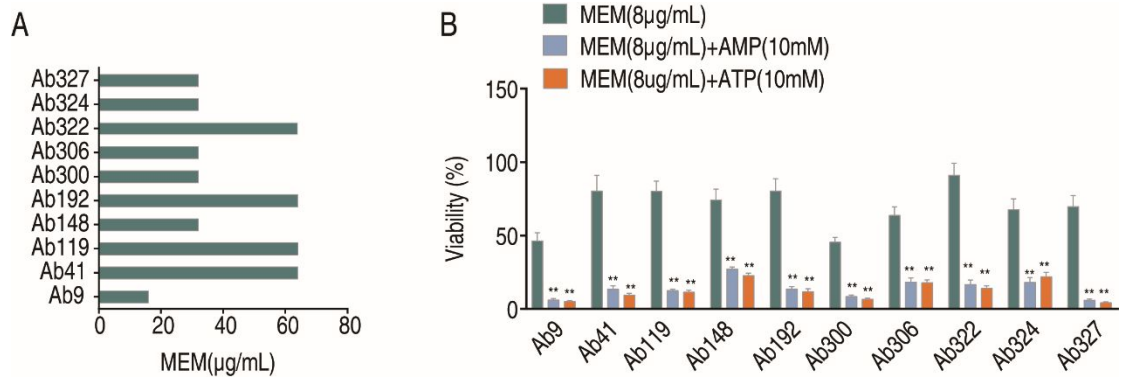


Figure S3. The synergistic bactericidal effect of AMP or ATP with meropenem to 10 additional CRAB strains.

(A) MIC of the additional 10 strains of clinically isolated CRAB to meropenem.

(B) Viability of the additional 10 strains of CRAB after treatment with meropenem plus AMP or ATP.

Table S1. MIC ranges for susceptible, intermediate, and resistant *A. baumannii* strains to other antibiotics (µg/mL)

Strains	Classification	AK	GEN	TOB	IPM	CIP	LEV	TZP	CTX	CRO	SXT	SAM	PB	TE	DO	MH	TIC
Ab4	XDR	> 1024	> 1024	> 1024	32	128	16	128/32	512	512	32/608	128/64	16	512	512	2	1
Ab61	XDR	> 1024	> 1024	> 1024	64	512	32	128/32	1024	1024	32/608	128/64	2	1024	512	8	2
Ab156	XDR	> 1024	> 1024	> 1024	64	128	32	128/32	1024	1024	> 32/608	64/32	2	512	32	4	1
Ab166	XDR	> 1024	> 1024	> 1024	64	512	32	128/32	1024	1024	> 32/608	64/32	8	1024	16	16	2
Ab167	XDR	> 1024	> 1024	> 1024	64	512	32	128/32	1024	1024	> 32/608	64/32	2	1024	16	32	1
Ab269	XDR	> 1024	> 1024	> 1024	128	1024	32	128/32	512	1024	> 32/608	64/32	2	512	32	8	1
Ab292	XDR	> 1024	> 1024	> 1024	32	1024	16	128/32	512	512	> 32/608	64/32	2	1024	16	8	2
Ab295	XDR	> 1024	> 1024	> 1024	64	> 1024	64	256/64	1024	1024	> 32/608	64/32	2	512	32	4	1
Ab314	XDR	> 1024	> 1024	> 1024	64	1024	32	256/64	512	512	> 32/608	128/64	1	512	32	8	1
Ab323	XDR	> 1024	> 1024	> 1024	128	1024	64	256/64	1024	1024	> 32/608	64/32	16	1024	16	16	2
Ab80	NOT MDR	16	4	32	0.5	0.5	0.5	16/4	32	4	0.5/19	4/2	2	4	0.5	2	0.25
Ab137	NOT MDR	4	4	1	0.25	0.25	0.125	2/0.5	4	0.5	0.5/19	2/1	2	2	0.5	1	0.25
Ab296	CSAB	8	4	32	0.5	0.125	0.0625	8/2	16	4	0.25/9.5	1/0.5	1	0.5	0.5	0.5	0.5
Ab311	NOT MDR	4	4	16	0.5	0.25	0.125	16/4	8	4	0.5/19	2/1	1	0.5	0.5	1	0.5
Ab455	MDR	16	8	8	0.25	1	0.25	8/2	8	32	16/304	2/1	2	32	2	0.1	0.5

AK: Amikacin, GEN: Gentamycin, TOB: Tobramycin, IPM: Imipenem, CIP: Ciprofloxacin, LEV: Levofloxacin, TZP: Piperacillin-tazobactam, CTX: Cefotaxime, CRO: Ceftriaxone, SXT: Trimethoprim-sulphamethoxazole, SAM: Ampicillin-sulbactam, PB: Polymyxin B, TE: Tetracycline, DO: Doxycycline, MH: Minocycline TIC: Tigecycline.

Blue, Grey and Yellow color represent susceptible, intermediate, and resistant to antibiotics.

Table S2. *A. baumannii* strains used in the experiment

Strains	Application
Ab80	Metabolomic analysis
Ab137	Metabolomic analysis
Ab296	Metabolomic analysis
Ab311	Metabolomic analysis
Ab455	Metabolomic analysis
Ab4	Metabolomic analysis and Antibacterial assay
Ab61	Metabolomic analysis and Antibacterial assay
Ab156	Metabolomic analysis and Antibacterial assay
Ab166	Metabolomic analysis and Antibacterial assay
Ab167	Metabolomic analysis and Antibacterial assay
Ab269	Metabolomic analysis and Antibacterial assay
Ab292	Metabolomic analysis and Antibacterial assay
Ab295	Metabolomic analysis and Antibacterial assay
Ab314	Metabolomic analysis and Antibacterial assay
Ab323	Metabolomic analysis and Antibacterial assay
Ab9	Antibacterial assay
Ab41	Antibacterial assay
Ab119	Antibacterial assay
Ab148	Antibacterial assay
Ab192	Antibacterial assay
Ab300	Antibacterial assay
Ab306	Antibacterial assay
Ab322	Antibacterial assay
Ab324	Antibacterial assay
Ab327	Antibacterial assay

Table S3. Primers for qPCR

Gene		Primer sequence (5'→3')
16S rRNA	Forward	cgccacactgggactgag
	Reverse	ccataaggccttcttcacacac
A1S_3134	Forward	ccgtgtagcgcatacttag
	Reverse	accacgagacaagttgtgt
A1S_1026	Forward	agctgtcgaagaggttatga
	Reverse	gaaagcacggtaactgag
A1S_3182	Forward	tccaaactggctaaaactca
	Reverse	acaagcaccttcacacaac
A1S_3185	Forward	tcagcctgatgagtttaagg
	Reverse	cgatcatgcaactaaactgtg
A1S_2352	Forward	ttgctgagccaacagtagtt
	Reverse	catttcactctgcaatacaa
A1S_1023	Forward	gtactcaggctcagttgatctg
	Reverse	cgccagattccatcacact
A1S_0498	Forward	tgacttctggtccagttgta
	Reverse	gaagcaactgagtcagaacc
A1S_0962	Forward	cggcgatgatgatgttga
	Reverse	ttgcgccagagttaatcatc
A1S_1466	Forward	gggggtccttgggtacactt
	Reverse	acgcgcttttgaggattca