

Supplementary Table S1. The detailed clinical information of 49 *Aeromonas* strains used for analysis in this study

Strain*	Species	Source	Patient sex	Patient age (year)	Collection date	Department
BJ014	<i>A.hydrophila</i>	Pleural liquid	M	63	Feb10, 2015	Thoracic surgery
BJ017	<i>A.hydrophila</i>	Pleural liquid	M	63	May27,2015	Thoracic surgery
BJ018	<i>A.hydrophila</i>	Pleural liquid	F	74	Jun 8, 2015	Thoracic surgery
BJ042	<i>A.caviae</i>	Urine	F	42	Jul 16, 2015	Renal Clinic
BJ054	<i>A.hydrophila</i>	Pleural liquid	M	70	Sep11, 2015	Thoracic surgery
BJ093	<i>A. caviae</i>	Bile	M	31	May 2, 2016	Liver transplantation
BJ201*	<i>A.hydrophila</i>	Blood	F	68	May16 2019	Respiratory department
BJ202	<i>A.hydrophila</i>	Blood	F	56	May19 2019	Intensive Care Unit (ICU)
BJ203	<i>A.hydrophila</i>	Blood	M	14	May23 2019	General Surgery Department
BJ204	<i>A.hydrophila</i>	Sputum	M	63	Jun4 2019	ICU
BJ205	<i>A.hydrophila</i>	Blood	M	79	Jun18 2019	Emergency department
BJ206	<i>A.hydrophila</i>	Blood	F	89	Jun30 2019	Emergency department
BJ207	<i>A.hydrophila</i>	Blood	F	69	Oct28 2019	Emergency department
BJ208	<i>A.caviae</i>	Blood	F	68	May7 2020	Gastroenterology
BJ209	<i>A.hydrophila</i>	Blood	M	69	May29 2020	Emergency department
BJ210	<i>A.hydrophila</i>	Blood	M	72	Dec19 2020	Emergency department
BJ211	<i>A.hydrophila</i>	Blood	M	57	Dec30 2020	Emergency department
BJ212	<i>A.hydrophila</i>	Drainage fluid	M	55	Feb2 2021	Vascular Surgery
BJ213	<i>A.hydrophila</i>	Sputum	M	75	May17 2021	Respiratory department
BJ214	<i>A.hydrophila</i>	Sputum	M	95	Aug18 2021	Medical Insurance Center
BJ215	<i>A.hydrophila</i>	Blood	F	86	Oct5 2021	Emergency department
BJ216	<i>A.hydrophila</i>	Blood	F	59	Nov12 2021	Urology

BJ217	<i>A.hydrophila</i>	Cerebrospinal fluid	M	19 day	Apr13 2022	Department Pediatrics
BJ218	<i>A.hydrophila</i>	Sputum	M	41	Jun2 2022	Department Infectious Diseases
BJ219	<i>A.hydrophila</i>	Urine	F	82	Jun18 2022	Department Orthopedics
BJ220	<i>A.hydrophila</i>	Sputum	M	64	Jul4 2022	ICU
BJ221	<i>A.hydrophila</i>	Sputum	F	83	Jul18 2022	Respiratory department
BJ222	<i>A.hydrophila</i>	Sputum	F	65	Aug17 2022	Respiratory department
BJ223	<i>A.hydrophila</i>	Urine	F	67	Sep13 2022	Rheumatology
BJ224	<i>A.hydrophila</i>	Drainage fluid	M	70	Dec8 2022	Department of General Surgery
BJ225	<i>A.hydrophila</i>	Sputum	M	94	Dec24 2022	Medical Insurance Center
BJ226	<i>A.hydrophila</i>	Urine	M	74	Jan28 2023	Urology
BJ227	<i>A.hydrophila</i>	Blood	M	87	Mar13 2023	Department Emergency department
BJ228	<i>A.caviae</i>	Sputum	F	61	Mar29 2023	Infectious Diseases
BJ229	<i>A.hydrophila</i>	Drainage fluid	M	53	Aug21 2023	Department of General Surgery
BJ230	<i>A. punctata</i>	Secretion	M	53	Aug27 2023	Cardiac surgery
BJ231	<i>A.hydrophila</i>	Drainage fluid	M	71	Sep6 2023	International Medical Center
BJ232	<i>A.hydrophila</i>	Bile	M	76	Sep21 2023	Gastroenterology
BJ233	<i>A.hydrophila</i>	Drainage fluid	M	53	Nov11 2023	Department of General Surgery
BJ234	<i>A.hydrophila</i>	Bile	F	77	Nov18 2023	Emergency department
BJ235	<i>A.hydrophila</i>	Blood	F	80	Nov30 2023	Gastroenterology
BJ236	<i>A.hydrophila</i>	Blood	M	89	Jan25 2024	Emergency department
BJ237	<i>A.hydrophila</i>	Blood	M	71	Feb28 2024	Emergency department
BJ238	<i>A.hydrophila</i>	Wound swab	F	85	Apr22 2024	Department of General Surgery
BJ239	<i>A.caviae</i>	Urine	M	76	Aug29 2024	Urology
BJ240	<i>A.caviae</i>	Urine	F	5 month	Sep24 2024	Department Pediatrics
						Department

BJ241	<i>A.caviae</i>	Sputum	M	83	Feb2 2025	Respiratory department
BJ242	<i>A.caviae</i>	Blood	M	71	Jul2 2025	Emergency department
BJ243	<i>A.hydrophila</i>	Wound swab	M	70	Jul7 2025	Department of General Surgery

Note. A, *Aeromonas*; M, male; F, female. *Strains (BJ014-BJ093) were identified by the ANI value matrix, and strains (BJ201-BJ243) were identified by MALDI-TOF-MS (bioMérieux, Marcy-l'Étoile, France).

Supplementary Table S2. Primers used in this study

Primer	Sequence (5'–3')	RE site ¹
cphA112upF	ctcgatatcgcatgcggtaccCCATGATTGATGTTCCATC	<i>Kpn</i> I
cphA112upR	GACCTGTGTAGAACTTGCTCCCTCGAACCAACC	-
cphA112dnF	TCGAGGGAGCAAGTTCTACACAGGTCCGGCCCA	-
cphA112dnR	GGCCCGatccaagcttcttctagaTGCAGATATTCGGCCCGGAT	<i>Xba</i> I
cphAF	GGAATTGTGAGCGGATAACAATTTACACAGGAAACAGCATATGATGAAAGGTTGGAT AAAG	<i>Nde</i> I
cphAR	ATATCGAATTCCTGCAGCCCGGGGGATCCACTAGTTCTAGATTATGACTGGGGTACTGC CT	<i>Xba</i> I

Note. ¹RE sites are underlined. RE, restriction endonuclease.

Supplementary Table S3. Antibiotic susceptibilities of *Aeromonas* strains used for genomic analysis in this study

Antibiotic ¹ (µg/mL)	BJ014	BJ017	BJ018	BJ042	BJ054	BJ093
Fluoroquinolones						
Ciprofloxacin	> 4 (R)	> 4 (R)	> 4 (R)	> 4 (R)	> 4 (R)	> 4 (R)
Nalidixic acid ^b	> 32 (R)	> 32 (R)	> 32 (R)	> 32 (R)	> 32 (R)	> 32 (R)
β-lactamases						
Ampicillin ^b	> 32 (R)	> 32 (R)	> 32 (R)	> 32 (R)	> 32 (R)	> 32 (R)
Amoxicillin-clavulanate	> 32 (R)	> 32 (R)	> 32 (R)	16 (I)	> 32 (R)	16 (I)
Ceftriaxone	> 8 (R)	> 8 (R)	> 8 (R)	8 (R)	> 8 (R)	> 8 (R)
Cefoxitin	> 32 (R)	> 32 (R)	> 32 (R)	16 (I)	> 32 (R)	> 32 (R)
Cefepime	≤ 1 (S)	> 32 (R)	2 (S)	> 32 (R)	2 (S)	> 32 (R)
Imipenem	0.5 (S)	0.5 (S)	1 (S)	0.25 (S)	1 (S)	0.25 (S)
Meropenem	0.06 (S)	0.06 (S)	0.06 (S)	0.06 (S)	0.06 (S)	0.06 (S)
Ertapenem	1 (I)	2 (R)	2 (R)	0.12 (S)	4 (R)	0.12 (S)
Amphenicols						
Chloramphenicol	≤ 2 (S)	≤ 2 (S)	4 (S)	> 64 (R)	≤ 2 (S)	4 (S)
Sulfanilamides						
Sulfonamides ^b	> 512 (R)	> 512 (R)	> 512 (R)	> 512 (R)	256 (S)	> 512 (R)
Trimethoprim–sulfamet hoxazole	0.25 (S)	0.25 (S)	0.25 (S)	> 4 (R)	0.25 (S)	> 4 (R)
Tetracyclines						
Tetracycline	≤ 2 (S)	≤ 2 (S)	≤ 2 (S)	> 32 (R)	≤ 2 (S)	> 32 (R)
Doxycycline ^b	2 (S)	2 (S)	2 (S)	16 (R)	2 (S)	8 (I)
Aminoglycosides						
Gentamicin	16 (R)	> 32 (R)	> 32 (R)	16 (R)	2 (S)	8 (I)
Macrolides						
Azithromycin ^b	> 64 (R)	> 64 (R)	> 64 (R)	32 (R)	> 64 (R)	4 (S)

Note. ¹ R: Resistant; I: Intermediate; S: Sensitive. ^a Breakpoints are based on the CLSIM45-ED3 standards for *Aeromonas* spp. ^b Other breakpoints refer to the CLSIM100-ED35 criteria for *Enterobacteriaceae*.

Supplementary Table S4. Carbapenem antibiotics resistance of the Cloned *Aeromonas* strains

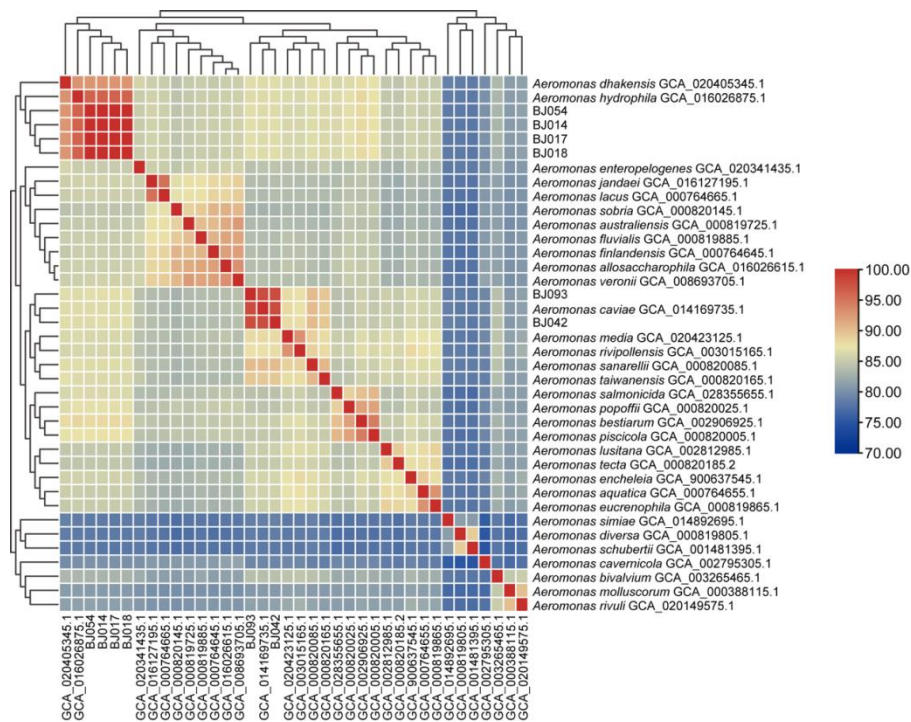
Strains	Imipenem MIC (µg/mL)		Ertapenem MIC (µg/mL)		Meropenem MIC (µg/mL)	
	0 µmol/L	100 µmol/L	0 µmol/L	100 µmol/L	0 µmol/L	100 µmol/L
	IPTG	IPTG	IPTG	IPTG	IPTG	IPTG
BJ054	1	1	4	4	0.06	0.06
BJ054Δ <i>cphA</i>	0.25	0.25	0.5-1	0.5-1	0.06	0.06
BJ054Δ <i>cphA</i> -pSRK <i>cphA</i>	0.25	0.5	0.5-1	2-4	0.06	0.06

Supplementary Table S5. The genetic characteristics of the plasmids in BJ014 and BJ018

Strains	Plasmid name	Genomic accession number	Size (bp)	GC content (%)	Putative antimicrobial resistance determinant content
BJ014	pBJ014-1	CP180560	196,803	53.6	<i>aac(3)-IId</i> , <i>bla</i> _{TEM-1} , <i>aac(6')-Ib10-like</i> , <i>bla</i> _{OXA-1} , <i>catB3</i> , <i>arr-3</i> , <i>qacED1</i> , <i>sul1</i> , <i>bla</i> _{MOX-3} , <i>fosC2</i> , <i>aac(6')-Ib4</i> , <i>bla</i> _{TEM-1} , <i>aph(6)-Id-like</i> , <i>aph(3'')-Ib-like</i> , <i>mphA</i> , <i>mrx</i>
	pBJ014-2	CP180561	7,480	53.5	-
	pBJ014-3	CP180562	6,760	46.2	<i>qnrS2</i>
	pBJ014-4	CP180563	2,810	56.9	-
BJ018	pBJ018-1	CP180565	196,803	53.6	<i>bla</i> _{MOX-18} , <i>sul1</i> , <i>qacED1</i> , <i>arr-3</i> , <i>catB3</i> , <i>bla</i> _{OXA-1} , <i>aac(6')-Ib10</i> , <i>bla</i> _{TEM-1} , <i>aac(3)-IId</i> , <i>mrx</i> , <i>mphA</i> , <i>aph(6)-Id</i> , <i>aph(3'')-Ib</i> , <i>aac(6')-Ib4</i> , <i>fosC2</i>
	pBJ018-2	CP180566	7,480	53.5	-
	pBJ018-3	CP180567	6,760	46.2	<i>qnrS2</i>
	pBJ018-4	CP180568	2,810	56.9	-

Supplementary Table S6. The known plasmids similar to plasmids pBJ014 and pBJ018 in public databases

Strains	Plasmid	Sequences BLAST	Accession Number	Coverage	Identity
BJ014	pBJ014-1	<i>Aeromonas hydrophila</i> strain QZ124 plasmid pQZ124-211	CP121101.1	92%	99.8%
	pBJ014-2	<i>Aeromonas</i> sp. ASNIH2 plasmid pAER-f133	CP026408.1	65%	91.34%
	pBJ014-3	<i>Aeromonas</i> sp. ASNIH2 plasmid pAER-f133	CP026408.1	65%	99.57%
	pBJ014-4	<i>Aeromonas</i> sp. ASNIH2 plasmid pAER-f133	MT218433.1	65%	99.57%
BJ018	pBJ018-1	<i>Aeromonas hydrophila</i> strain QZ124 plasmid pQZ124-211	CP121101.1	92%	99.88%
	pBJ018-2	<i>Aeromonas</i> sp. ASNIH2 plasmid pAER-f133	CP026408.1	60%	91.20%
	pBJ018-3	<i>Aeromonas</i> sp. ASNIH2 plasmid pAER-e58e	CP026410.1	100%	100%
	pBJ018-4	<i>Aeromonas hydrophila</i> strain GD21SC2284TT plasmid pHN21SC2284-2	CP102112.1	100%	96.24%



Supplementary Figure S1. Average nucleotide identity (ANI) values for the whole genome sequences of 6 self-collected and type strains of *Aeromonas* sp.