

Supplementary Material

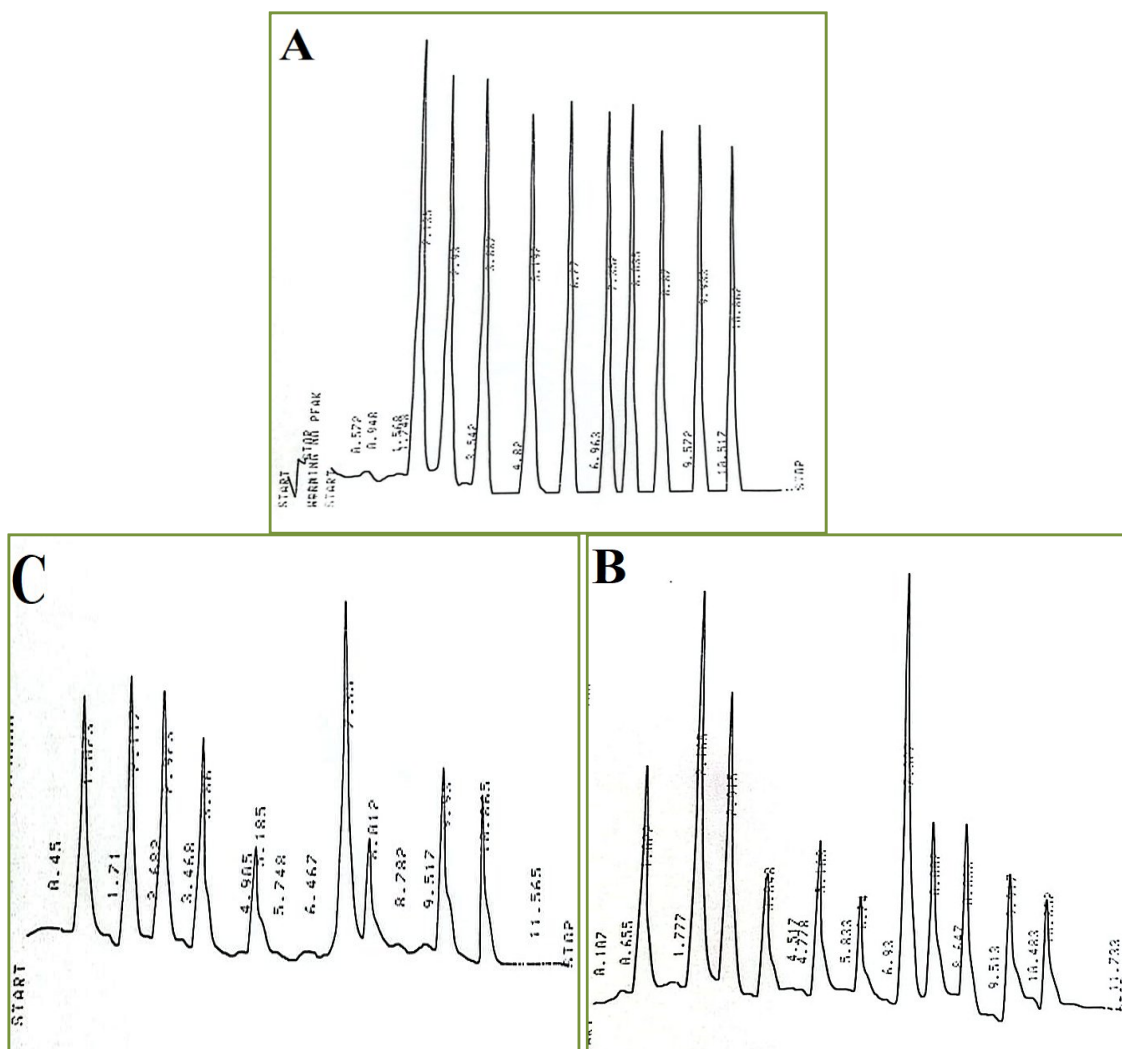


Figure S1 HPLC analysis of standard (A) and phenolic fraction of leaves (B) and stem bark (C)

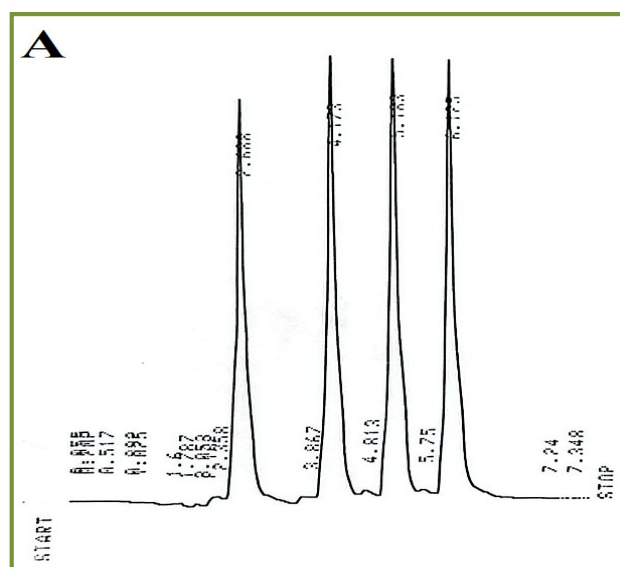
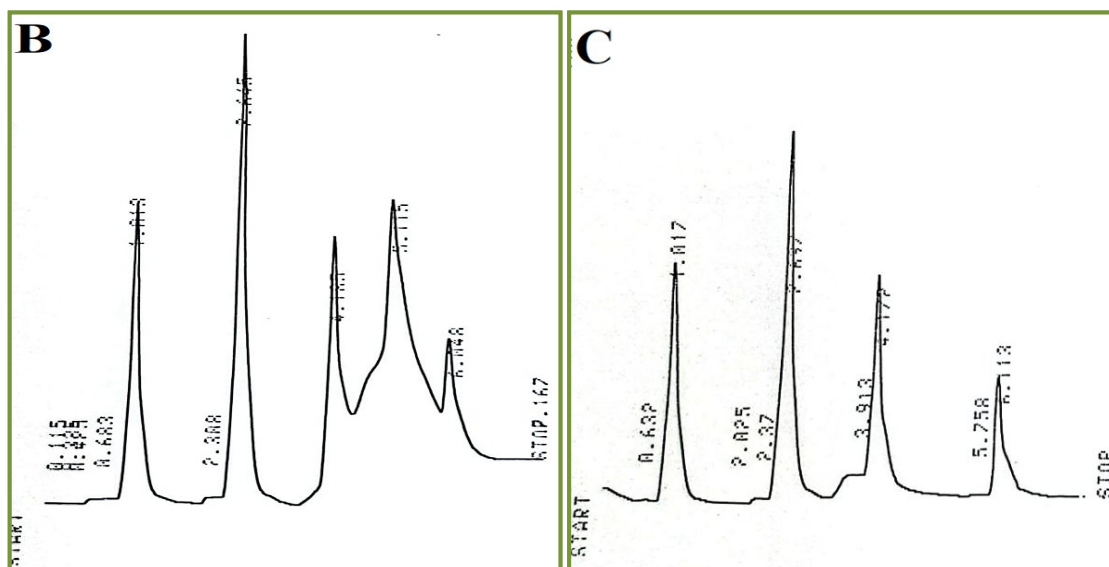


Figure S2 HPLC analysis of standard (A) and alkaloid fraction of leaves (B) and stem bark (C)



Doctor:		Inspection time:	2025-01-14 11:29:53	Record No:	
Department/Bed No:	شعبة المختبر - وحدة البكتريولوجي	Specimen Type:	Urine		
Sample code:	250116112953959	Test purpose:	Ordinary bacterial culture + drug susceptibility		
Clinical diagnosis:		Medication:			

Microorganism:		Acinetobacter baumannii [Craba,XDR]					
----------------	--	-------------------------------------	--	--	--	--	--

Tier	Drug	MIC	Result	Expert	S Breakpoint	I Breakpoint	R Breakpoint
A	Gentamicin	≥ 16ug/ml	Resistance	/	≤ 4ug/ml	8ug/ml	≥ 16ug/ml
A	Ampicillin-Sulbactam	≤ 8/4ug/ml	Sensitive	/	≤ 8/4ug/ml	16/8ug/ml	≥ 32/16ug/ml
A	Levofloxacin	≥ 8ug/ml	Resistance	/	≤ 2ug/ml	4ug/ml	≥ 8ug/ml
A	Imipenem	≥ 32ug/ml	Resistance	/	≤ 2ug/ml	4ug/ml	≥ 8ug/ml
A	Ceftazidime	8ug/ml	Sensitive	/	≤ 8ug/ml	16ug/ml	≥ 32ug/ml
A	Meropenem	16ug/ml	Resistance	/	≤ 2ug/ml	4ug/ml	≥ 8ug/ml
B	Piperacillin-Tazobactam	≥ 128/4ug/ml	Resistance	/	≤ 16/4ug/ml	32/4-64/4ug/ml	≥ 128/4ug/ml
B	Cefepime	≥ 32ug/ml	Resistance	/	≤ 8ug/ml	16ug/ml	≥ 32ug/ml
B	Trimethoprim-Sulfamethoxazole	≥ 8/152ug/ml	Resistance	/	≤ 2/38ug/ml	/	≥ 4/76ug/ml
B	Cefotaxime	≥ 64ug/ml	Resistance	/	≤ 8ug/ml	16-32ug/ml	≥ 64ug/ml
B	Amikacin	≥ 64ug/ml	Resistance	/	≤ 16ug/ml	32ug/ml	≥ 64ug/ml
B	Minocycline	≤ 1ug/ml	Sensitive	/	≤ 4ug/ml	8ug/ml	≥ 16ug/ml
O	Cefoperazone-Sulbactam	≤ 8/4ug/ml	Sensitive	/	≤ 16/8ug/ml	32/16ug/ml	≥ 64/32ug/ml
O	Polymixin B	≤ 1ug/ml	Intermediate	/	/	≤ 2ug/ml	≥ 4ug/ml
INV	Chloramphenicol△	≤ 8ug/ml	/	/	/	/	/
INV	Ampicillin△	≥ 32ug/ml	resistance	Resistance	/	/	/
INV	Ceftazidime-Clavulanic acid○	≥ 2/4ug/ml	/	/	/	/	/
INV	Cefotaxime-Clavulanic acid○	≥ 2/4ug/ml	/	/	/	/	/
INV	Cefazolin△	≥ 32ug/ml	resistance	Resistance	/	/	/
INV	Cefoxitin△	≥ 64ug/ml	resistance	Resistance	/	/	/
INV	Cefuroxime△	≥ 64ug/ml	resistance	Resistance	/	/	/
INV	Nitrofurantoin○	≥ 128ug/ml	/	/	/	/	/
INV	Ertapenem△	≥ 16ug/ml	resistance	Resistance	/	/	/
INV	Tigecycline○	≤ 0.25ug/ml	/	/	/	/	/
INV	Azithromycin△	≥ 64ug/ml	resistance	Resistance	/	/	/

Note: The test result of this report is only valid within 24 hours. The result is responsible for this specimen only. The results should be interpreted in combination with the patient's clinical manifestations and treatment response.

Remark:

- ① In the above result, unit of "mm" means that the antibiotic is detected by K-B method, and "μg/ml" means that the antibiotic is detected by the MIC method.
- ② The sensitivity(S) breakpoint, intermediate(M) breakpoint and drug resistance(R) breakpoint is "/" indicate that there is no guiding breakpoint standard for this antibiotic.
- ③ An antibiotic with a △ means that the antibiotic is naturally resistant.
- ④ An antibiotic with a ○ means that the antibiotic is a non-breakpoint antibiotic.
- ⑤ An antibiotic with a * means that the antibiotic result is defined by expert system.

Technician:	DL	Director:	
Reporter:		Report time:	2025-01-16 11:35:50

Figure S3 report of IST card for *Acinetobacter baumannii*

Doctor:		Inspection time:	2025-10-20 10:14:27		Record No:		
Department/Bed No:	شعبة المختبر - وحدة البكتريولوجي		Specimen Type:	Urine			
Sample code:	251022101427168		Test purpose:	Ordinary bacterial culture + drug susceptibility			
Clinical diagnosis:			Medication:				
Microorganism:	Escherichia Coli [ESBL producing strain,MDR,CTX-CRO-R-ECO]						
Tier	Drug	MIC	Result	Expert	S Breakpoint	I Breakpoint	R Breakpoint
U	Cefazolin	≥32ug/ml	Resistance	/	≤16ug/ml	/	≥32ug/ml
U	Nitrofurantoin	≤16ug/ml	Sensitive	/	≤32ug/ml	64ug/ml	≥128ug/ml
A	Ampicillin	≥32ug/ml	Resistance	/	≤8ug/ml	16ug/ml	≥32ug/ml
A	Gentamicin	≤1ug/ml	Sensitive	/	≤2ug/ml	4ug/ml	≥8ug/ml
B	Ampicillin-Sulbactam	≤8/4ug/ml	Sensitive	/	≤8/4ug/ml	16/8ug/ml	≥32/16ug/ml
B	Piperacillin-Tazobactam	≤4/4ug/ml	Sensitive	/	≤16/4ug/ml	32/4-64/4ug/ml	≥128/4ug/ml
B	Cefepime	≥32ug/ml	Resistance	/	≤2ug/ml	4-8ug/ml	≥16ug/ml
B	Cefoxitin	≥64ug/ml	Resistance	/	≤8ug/ml	16ug/ml	≥32ug/ml
B	Cefuroxime(iv)	≥64ug/ml	Resistance	/	≤8ug/ml	16ug/ml	≥32ug/ml
B	Cefuroxime(oral)	≥64ug/ml	Resistance	/	≤4ug/ml	8-16ug/ml	≥32ug/ml
B	Levofloxacin	0.5ug/ml	Sensitive	/	≤0.5ug/ml	1ug/ml	≥2ug/ml
B	Trimethoprim-Sulfamethoxazole	≥8/152ug/ml	Resistance	/	≤2/38ug/ml	/	≥4/76ug/ml
B	Cefotaxime	≥64ug/ml	Resistance	/	≤1ug/ml	2ug/ml	≥4ug/ml
B	Imipenem	≤0.25ug/ml	Sensitive	/	≤1ug/ml	2ug/ml	≥4ug/ml
B	Meropenem	≤0.06ug/ml	Sensitive	/	≤1ug/ml	2ug/ml	≥4ug/ml
B	Amikacin	≤4ug/ml	Sensitive	/	≤4ug/ml	8ug/ml	≥16ug/ml
B	Ertapenem	≤0.015ug/ml	Sensitive	/	≤0.5ug/ml	1ug/ml	≥2ug/ml
C	Ceftazidime	≥32ug/ml	Resistance	/	≤4ug/ml	8ug/ml	≥16ug/ml
O	Cefoperazone-Sulbactam	≤8/4ug/ml	Sensitive	/	≤16/8ug/ml	32/16ug/ml	≥64/32ug/ml
O	Minocycline	≤1ug/ml	Sensitive	/	≤4ug/ml	8ug/ml	≥16ug/ml
O	Polymixin B	≤1ug/ml	Intermediate	/	/	≤2ug/ml	≥4ug/ml
INV	Chloramphenicol	≤8ug/ml	/	/	/	/	/
INV	Ceftazidime-Clavulanic acid○	≤1/4ug/ml	/	/	/	/	/
INV	Cefotaxime-Clavulanic acid○	≥2/4ug/ml	/	/	/	/	/
INV	Tigecycline	≤0.25ug/ml	Sensitive	/	≤1ug/ml	2ug/ml	>2ug/ml
INV	Azithromycin△	32ug/ml	resistance	Resistance	/	/	/

Note: The test result of this report is only valid within 24 hours. The result is responsible for this specimen only. The results should be interpreted in combination with the patient's clinical manifestations and treatment response.

Remark:

- ①In the above result, unit of "mm" means that the antibiotic is detected by K-B method, and "μg/ml" means that the antibiotic is detected by the MIC method.
- ②The sensitivity(S) breakpoint, intermediate(M) breakpoint and drug resistance(R) breakpoint is "/" indicate that there is no guiding breakpoint standard for this antibiotic.
- ③An antibiotic with a △ means that the antibiotic is naturally resistant.
- ④An antibiotic with a ○ means that the antibiotic is a non-breakpoint antibiotic.
- ⑤An antibiotic with a * means that the antibiotic result is defined by expert system.

Technician: DL

Director:

Reporter:

Report time: 2025-10-22 10:19:40

Figure S4 report of IST card for *Escherichia Coli*

Doctor:		Inspection time:	2025-01-06 13:35:26	Record No:	
Department/Bed No:	شعبة المختبر - وحدة البكتريولوجي	Specimen Type:	Urine		
Sample code:	250108133526842	Test purpose:	Ordinary bacterial culture + drug susceptibility		
Clinical diagnosis:		Medication:			

Microorganism:		Staphylococcus aureus [MRSA,B-lac producing strain,MDR]					
Tier	Drug	MIC	Result	Expert	S Breakpoint	I Breakpoint	R Breakpoint
U	Norfloxacin	≥32ug/ml	Resistance	/	≤4ug/ml	8ug/ml	≥16ug/ml
U	Nitrofurantoin	≤32ug/ml	Sensitive	/	≤32ug/ml	64ug/ml	≥128ug/ml
A	Penicillin G	≥8ug/ml	Resistance	/	≤0.12ug/ml	/	≥0.25ug/ml
A	Oxacillin	4ug/ml	Resistance	/	≤2ug/ml	/	≥4ug/ml
A	Cefoxitin*	≥16ug/ml	Resistance	Resistance	≤4ug/ml	/	≥8ug/ml
A	Trimethoprim-Sulfamethoxazole	≤0.5/9.5ug/ml	Sensitive	/	≤2/38ug/ml	/	≥4/76ug/ml
B	Doxycycline	4ug/ml	Sensitive	/	≤4ug/ml	8ug/ml	≥16ug/ml
B	Vancomycin	≤0.5ug/ml	Sensitive	/	≤2ug/ml	4-8ug/ml	≥16ug/ml
B	Daptomycin	≤0.5ug/ml	Sensitive	/	≤1ug/ml	/	/
B	Rifampin	≤0.015ug/ml	Sensitive	/	≤1ug/ml	2ug/ml	≥4ug/ml
B	Linezolid	≤1ug/ml	Sensitive	/	≤4ug/ml	/	≥8ug/ml
C	Levofloxacin	≥8ug/ml	Resistance	/	≤1ug/ml	2ug/ml	≥4ug/ml
C	Moxifloxacin	1ug/ml	Intermediate	/	≤0.5ug/ml	1ug/ml	≥2ug/ml
C	Gentamicin	≥16ug/ml	Resistance	/	≤4ug/ml	8ug/ml	≥16ug/ml
INV	Erythromycin	≥8ug/ml	/	/	/	/	/
INV	Azithromycin	≥16ug/ml	/	/	/	/	/
INV	Teicoplanin	≤1ug/ml	Sensitive	/	≤8ug/ml	16ug/ml	≥32ug/ml
INV	Clindamycin	≤0.25ug/ml	/	/	/	/	/
INV	Chloramphenicol	≤8ug/ml	/	/	/	/	/
INV	Inducible Clindamycin resistance test ○	≤4/0.5ug/ml	/	/	/	/	/
INV	Tigecycline	≤0.12ug/ml	Sensitive	/	≤0.5ug/ml	/	/
INV	Amikacin○	≤4ug/ml	/	/	/	/	/
INV	Cefazolin*	4ug/ml	Resistance	Resistance	/	/	/

Note: The test result of this report is only valid within 24 hours. The result is responsible for this specimen only. The results should be interpreted in combination with the patient's clinical manifestations and treatment response.

Remark:

- ①In the above result, unit of "mm" means that the antibiotic is detected by K-B method, and "μg/ml" means that the antibiotic is detected by the MIC method.
- ②The sensitivity(S) breakpoint, intermediate(M) breakpoint and drug resistance(R) breakpoint is "/" indicate that there is no guiding breakpoint standard for this antibiotic.
- ③An antibiotic with a △ means that the antibiotic is naturally resistant.
- ④An antibiotic with a ○ means that the antibiotic is a non-breakpoint antibiotic.
- ⑤An antibiotic with a * means that the antibiotic result is defined by expert system.

Technician: DL
Reporter:

Director:
Report time: 2025-01-08 13:41:12

Figure S5 report of IST card for *Staphylococcus Aureus*

Doctor:		Inspection time:	2025-01-14 09:37:55	Record No:	
Department/Bed No:	شعبة المختبر - وحدة البكتريولوجي	Specimen Type:	Urine		
Sample code:	250116112953959	Test purpose:	Ordinary bacterial culture + drug susceptibility		
Clinical diagnosis:		Medication:			

Microorganism:	<i>Pseudomonas aeruginosa</i> [XDR]
----------------	-------------------------------------

Tier	Drug	MIC	Result	Expert	S Breakpoint	I Breakpoint	R Breakpoint
U	Norfloxacin	≥32ug/ml	Resistance	/	≤4ug/ml	8ug/ml	≥16ug/ml
A	Ceftazidime	≥64ug/ml	Resistance	/	≤8ug/ml	16ug/ml	≥32ug/ml
A	Tobramycin	16ug/ml	Resistance	/	≤1ug/ml	2ug/ml	≥4ug/ml
A	Piperacillin-Tazobactam	≤4/4ug/ml	Sensitive	/	≤16/4ug/ml	32/4ug/ml	≥64/4ug/ml
B	Cefepime	≥64ug/ml	Resistance	/	≤8ug/ml	16ug/ml	≥32ug/ml
B	Amikacin	≤4ug/ml	Sensitive	/	≤16ug/ml	32ug/ml	≥64ug/ml
B	Imipenem	2ug/ml	Sensitive	/	≤2ug/ml	4ug/ml	≥8ug/ml
B	Meropenem	4ug/ml	Intermediate	/	≤2ug/ml	4ug/ml	≥8ug/ml
B	Aztreonam	≥64ug/ml	Resistance	/	≤8ug/ml	16ug/ml	≥32ug/ml
B	Levofloxacin	≥16ug/ml	Resistance	/	≤1ug/ml	2ug/ml	≥4ug/ml
B	Ciprofloxacin	≥4ug/ml	Resistance	/	≤0.5ug/ml	1ug/ml	≥2ug/ml
O	Piperacillin	32ug/ml	Intermediate	/	≤16ug/ml	32ug/ml	≥64ug/ml
O	Cefoperazone-Sulbactam	16/8ug/ml	Sensitive	/	≤16/8ug/ml	/	≥32/16ug/ml
O	Ticarcillin-Clavulanic acid	32/2ug/ml	Intermediate	/	≤16/2ug/ml	32/2-64/2ug/ml	≥128/2ug/ml
O	Polymixin B	≤0.5ug/ml	Intermediate	/	/	≤2ug/ml	≥4ug/ml
INV	Chloramphenicol△	≤8ug/ml	/	/	/	/	/
INV	Gentamicin○	8ug/ml	/	/	/	/	/
INV	Ampicillin-Sulbactam△	≥64/32ug/ml	resistance	Resistance	/	/	/
INV	Trimethoprim-Sulfamethoxazole△	32/608ug/ml	resistance	Resistance	/	/	/
INV	Minocycline△	≤4ug/ml	resistance	Resistance	/	/	/
INV	Tigecycline△	≤0.5ug/ml	resistance	Resistance	/	/	/
INV	Doxyeycline△	≤4ug/ml	resistance	Resistance	/	/	/

Note: The test result of this report is only valid within 24 hours. The result is responsible for this specimen only. The results should be interpreted in combination with the patient's clinical manifestations and treatment response.

Remark:

- ①In the above result, unit of "mm" means that the antibiotic is detected by K-B method, and "μg/ml" means that the antibiotic is detected by the MIC method.
- ②The sensitivity(S) breakpoint, intermediate(M) breakpoint and drug resistance(R) breakpoint is "/" indicate that there is no guiding breakpoint standard for this antibiotic.
- ③An antibiotic with a △ means that the antibiotic is naturally resistant.
- ④An antibiotic with a ○ means that the antibiotic is a non-breakpoint antibiotic.
- ⑤An antibiotic with a * means that the antibiotic result is defined by expert system.

Technician: DL

Director:

Reporter:

Report time: 2025-01-16 11:48:24

Figure S6 report of IST card for *Pseudomonas Aeruginosa*

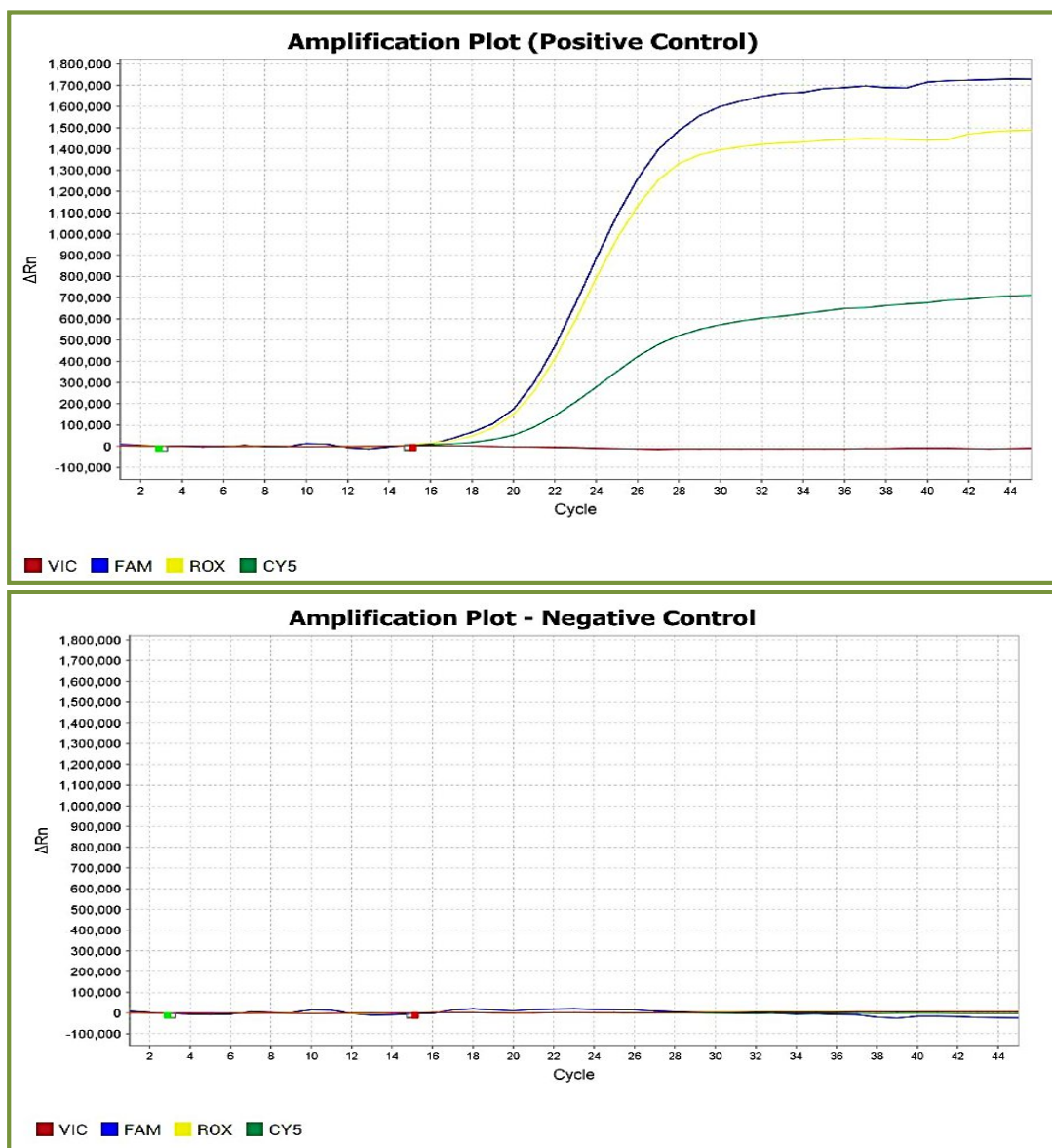


Figure S7 positive and negative control of RT-PCR

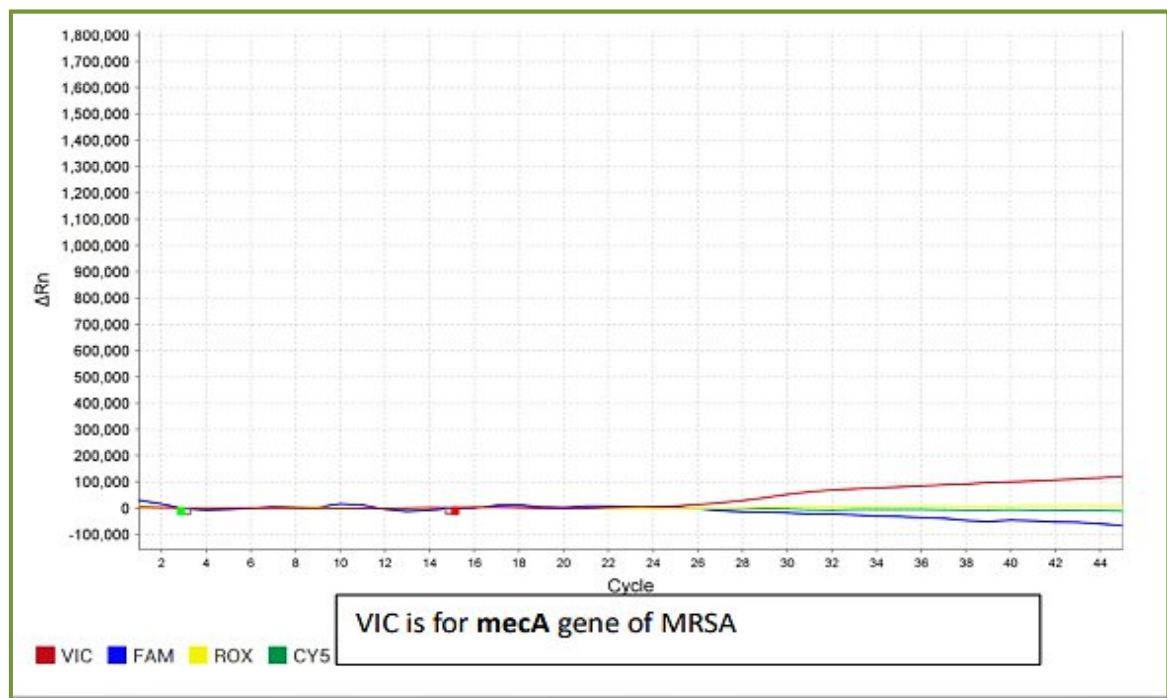


Figure S8 detection *mecA* gene in *MRSA* by TR-PCR

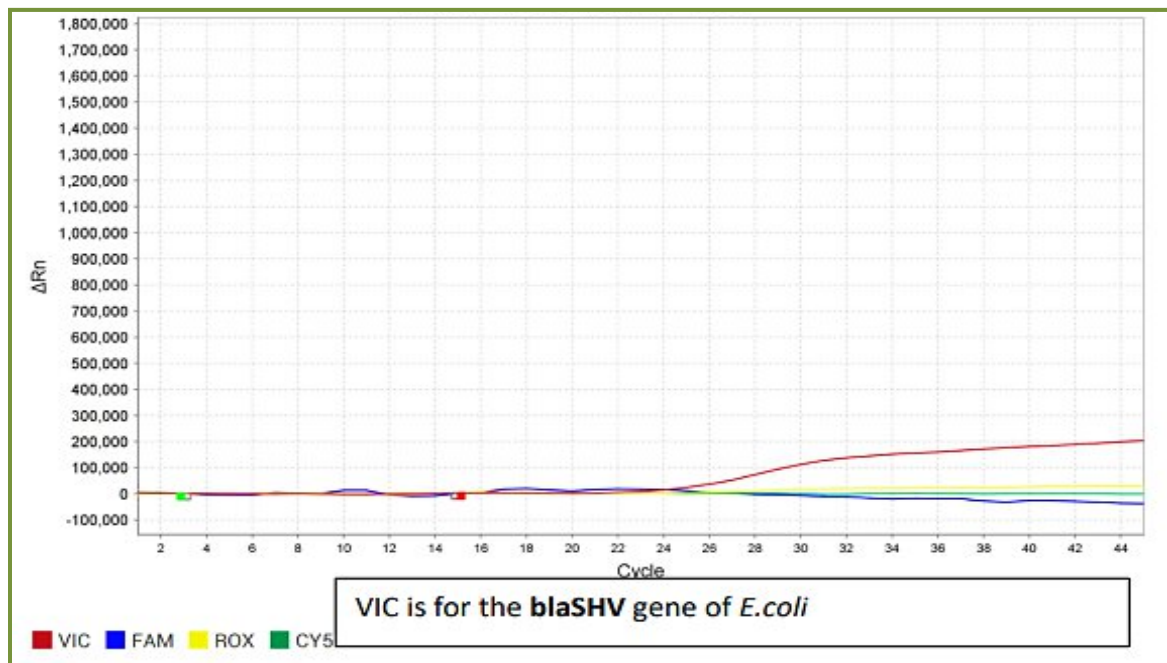


Figure S9 detection *blaSHV* gene in *E. coli* by TR-PCR

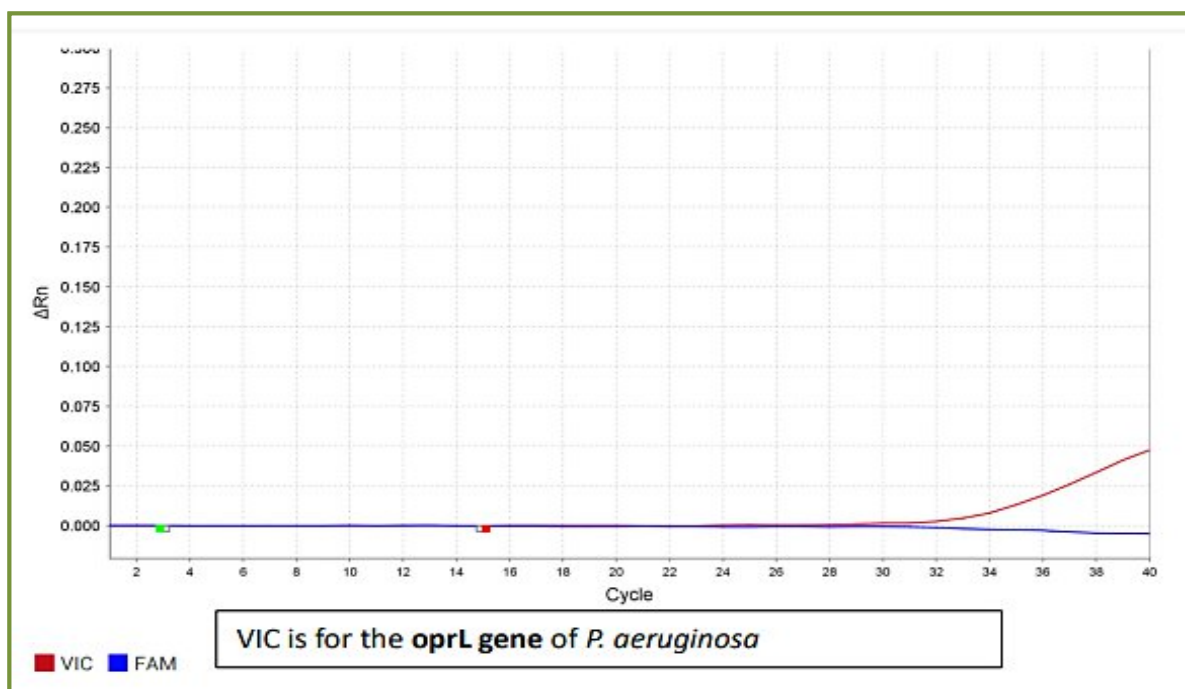


Figure S10 detection OprL gene in *P. aeruginosa* by TR-PCR

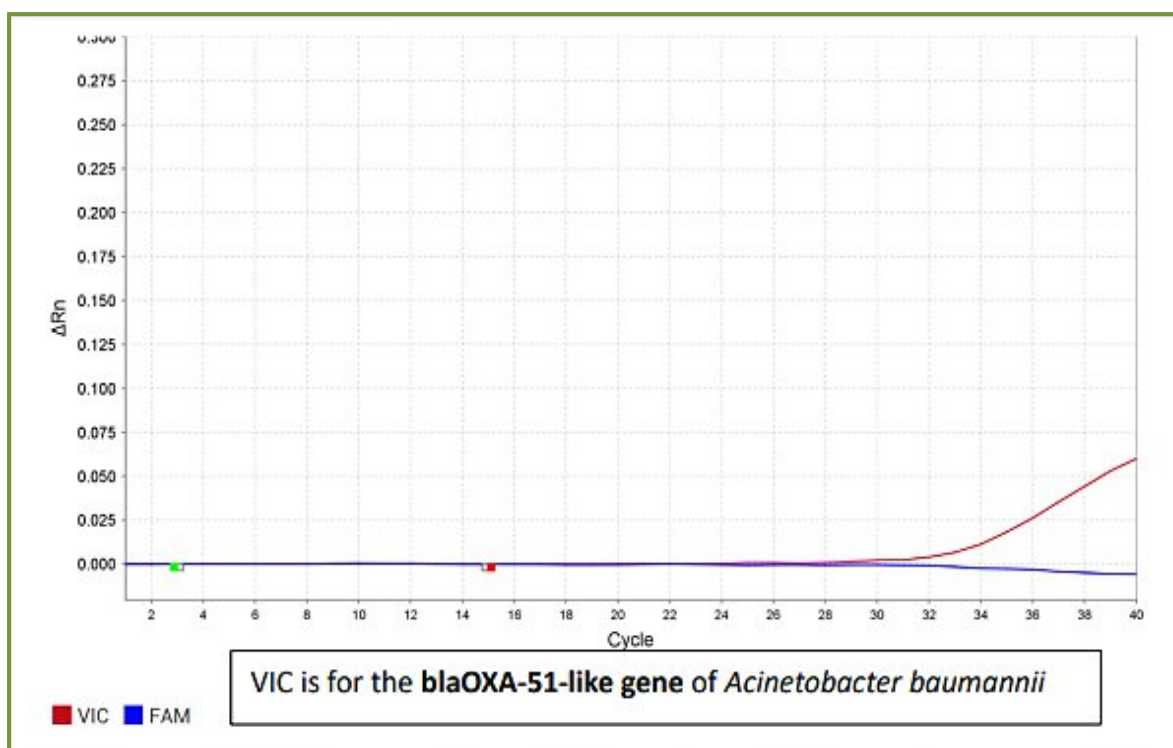


Figure S11 detection blaOXA-51 like gene in *A. baumannii* by TR-PCR

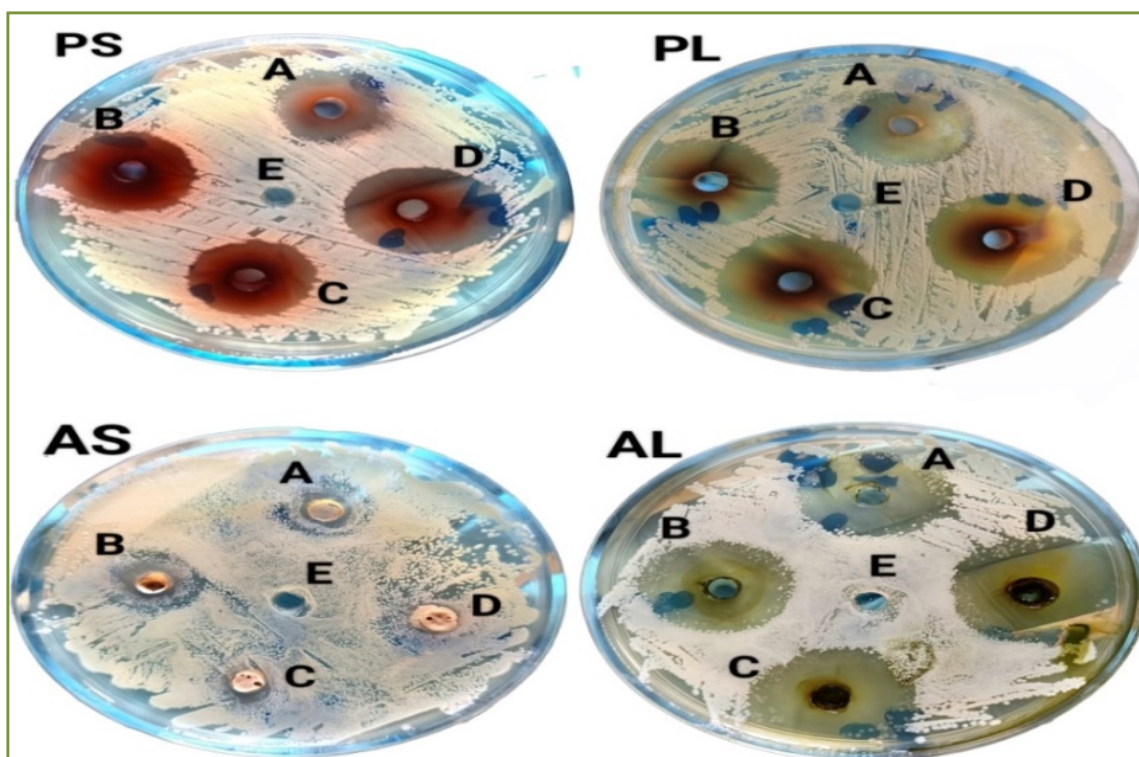


Figure S12 inhibition zone of different fraction on *MRSA*. in which PS = phenol of stem, PL = phenol of leaf, AS = alkaloid of stem and AL = alkaloid of leaf.

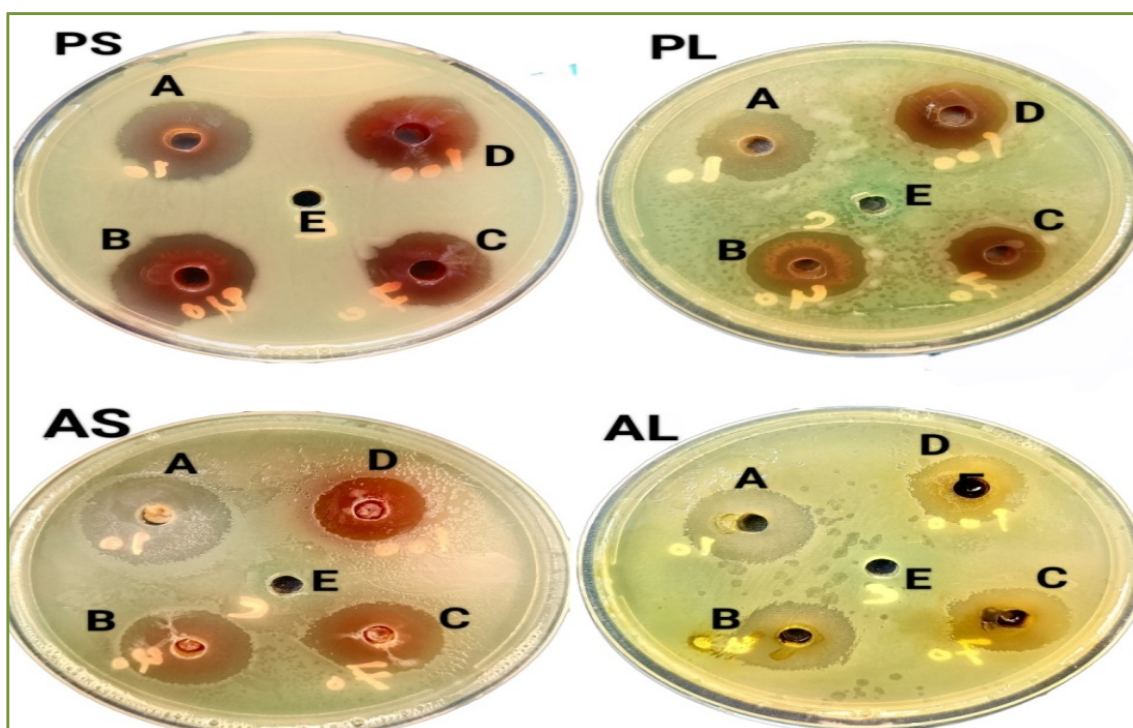


Figure S13 inhibition zone of different fraction on *P.aeruginosa*. in which PS = phenol of stem, PL = phenol of leaf, AS = alkaloid of stem and AL = alkaloid of leaf

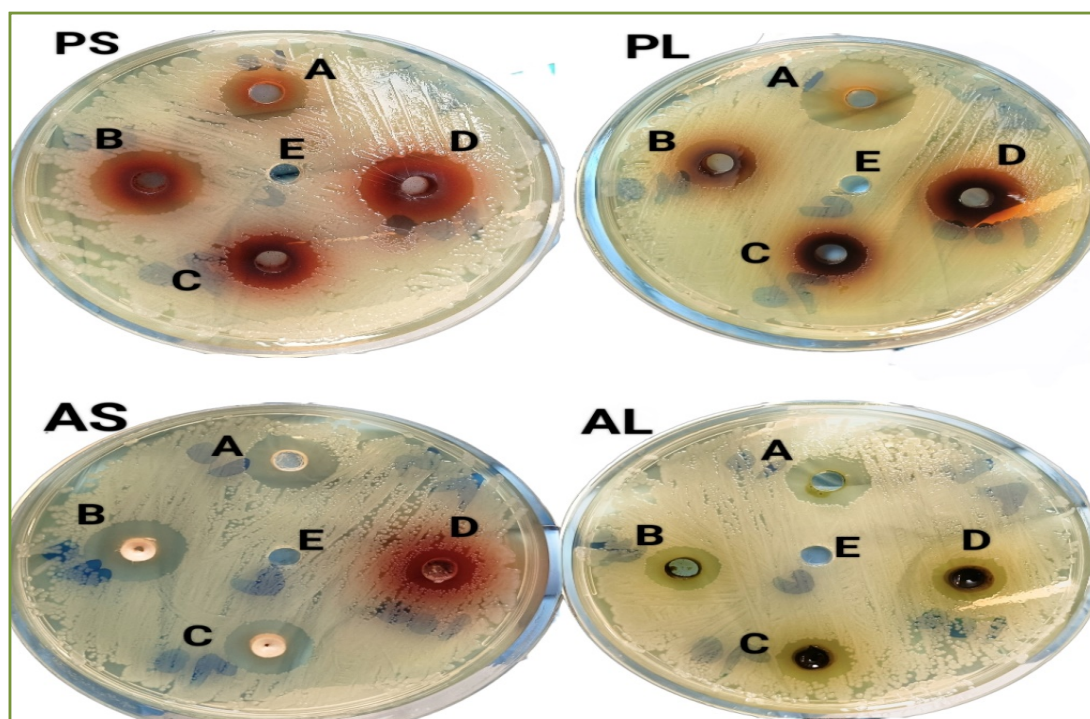


Figure S14 inhibition zone of different fraction on *E. coli*. in which PS = phenol of stem, PL = phenol of leaf, AS = alkaloid of stem and AL = alkaloid of leaf

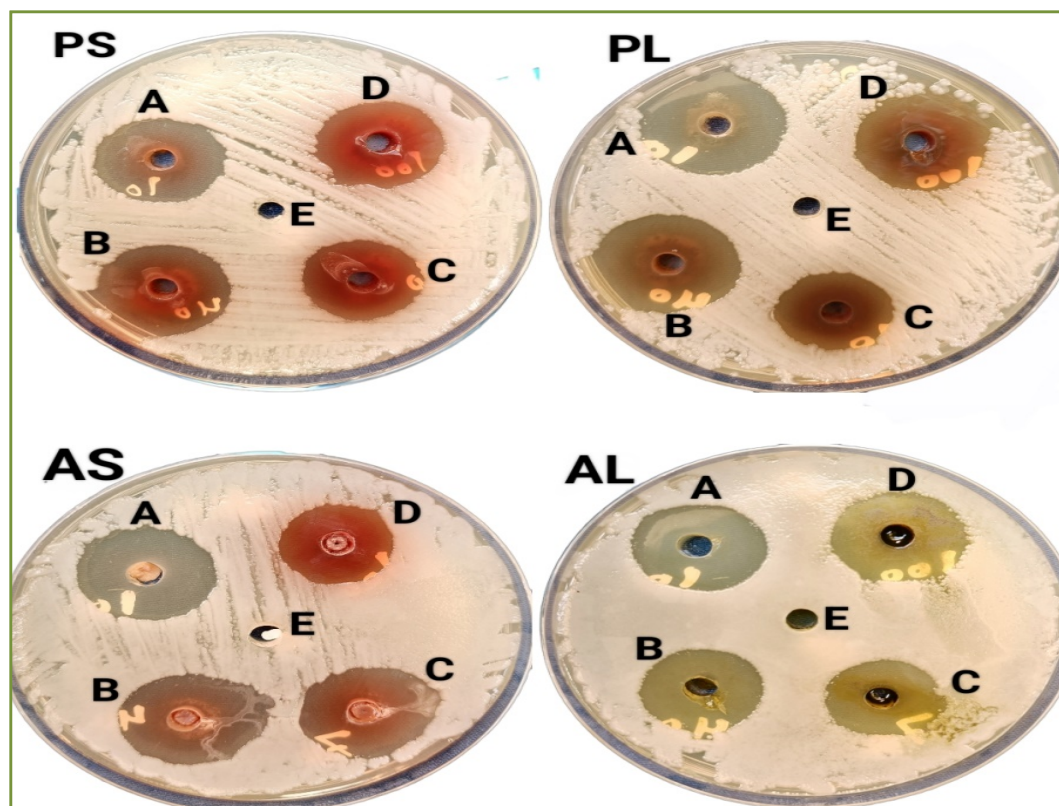


Figure S15 inhibition zone of different fraction on *E. coli*. in which PS = phenol of stem, PL = phenol of leaf, AS = alkaloid of stem and AL = alkaloid of leaf

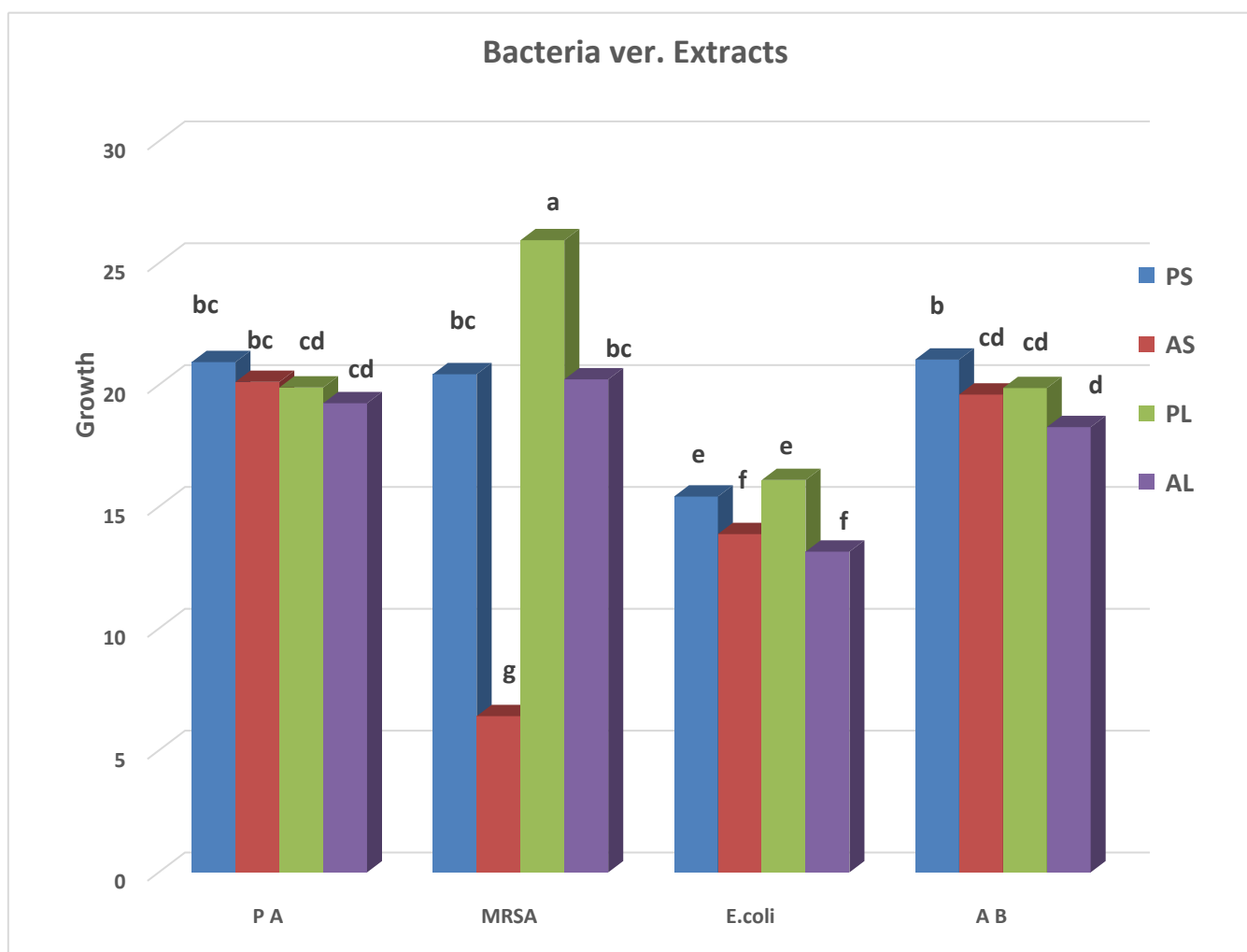


Figure S16 Comparative effect of different fractions against selected bacterial isolates

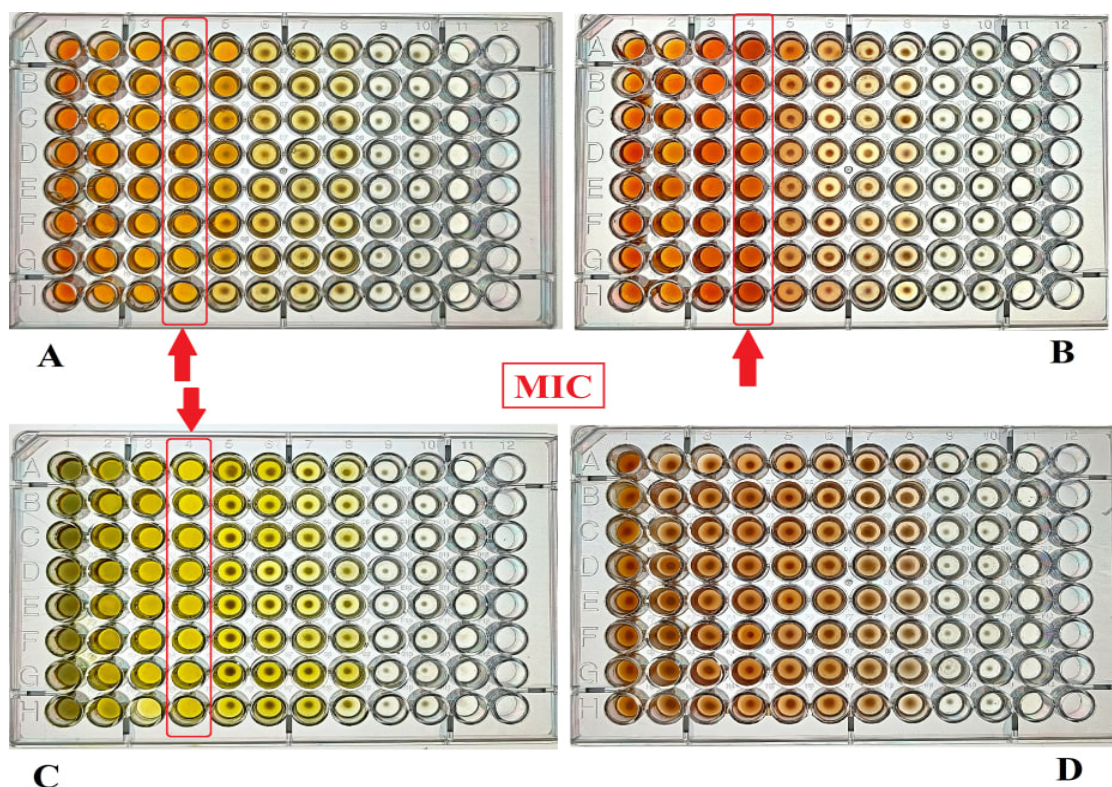


Figure S17 MIC of fractions against *MRSA*, in which A = phenolic fraction of leaf, B = phenolic fraction of stem, C = alkaloid fraction of leaf and D = alkaloid fraction of stem

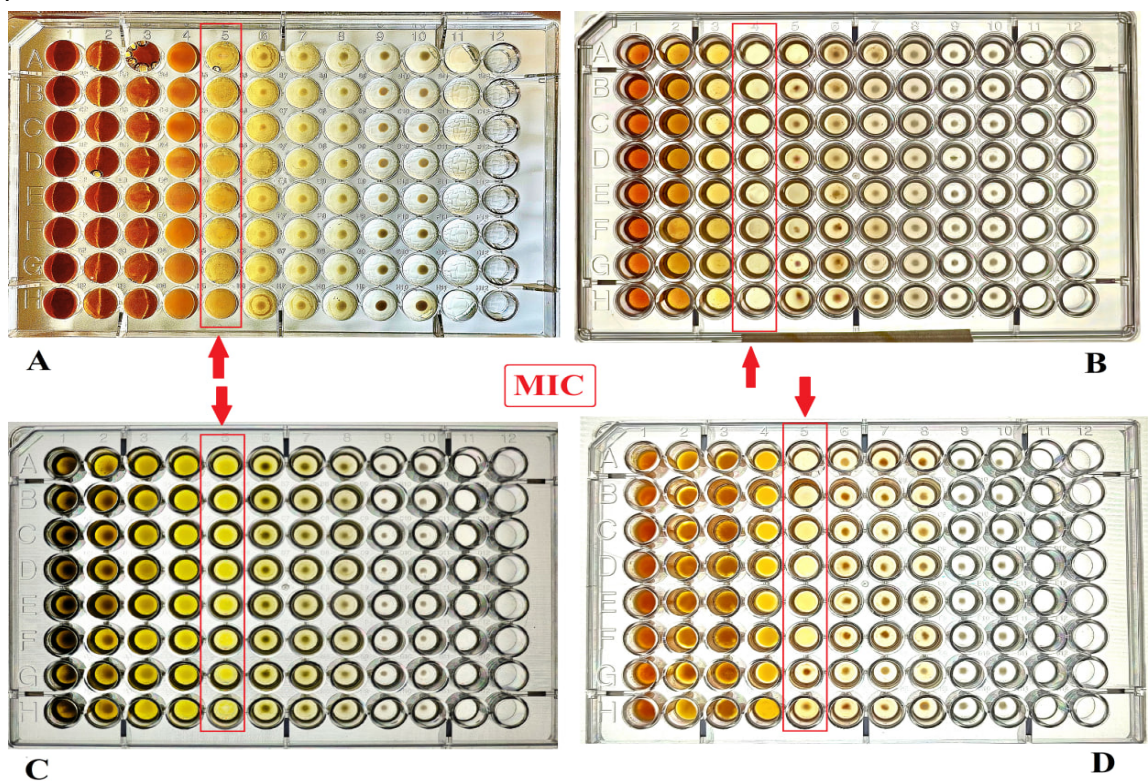


Figure S18 MIC of fractions against *E. coli*, in which A = phenolic fraction of leaf, B = phenolic fraction of stem, C = alkaloid fraction of leaf and D = alkaloid fraction of stem.

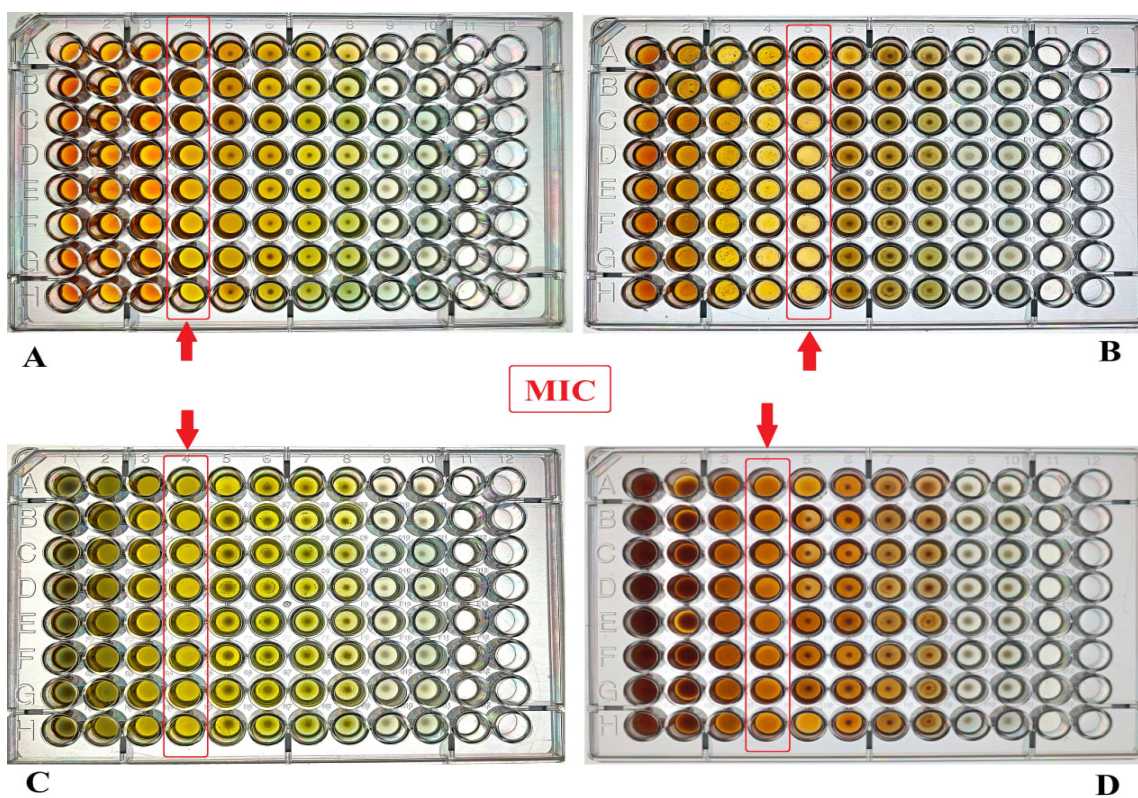
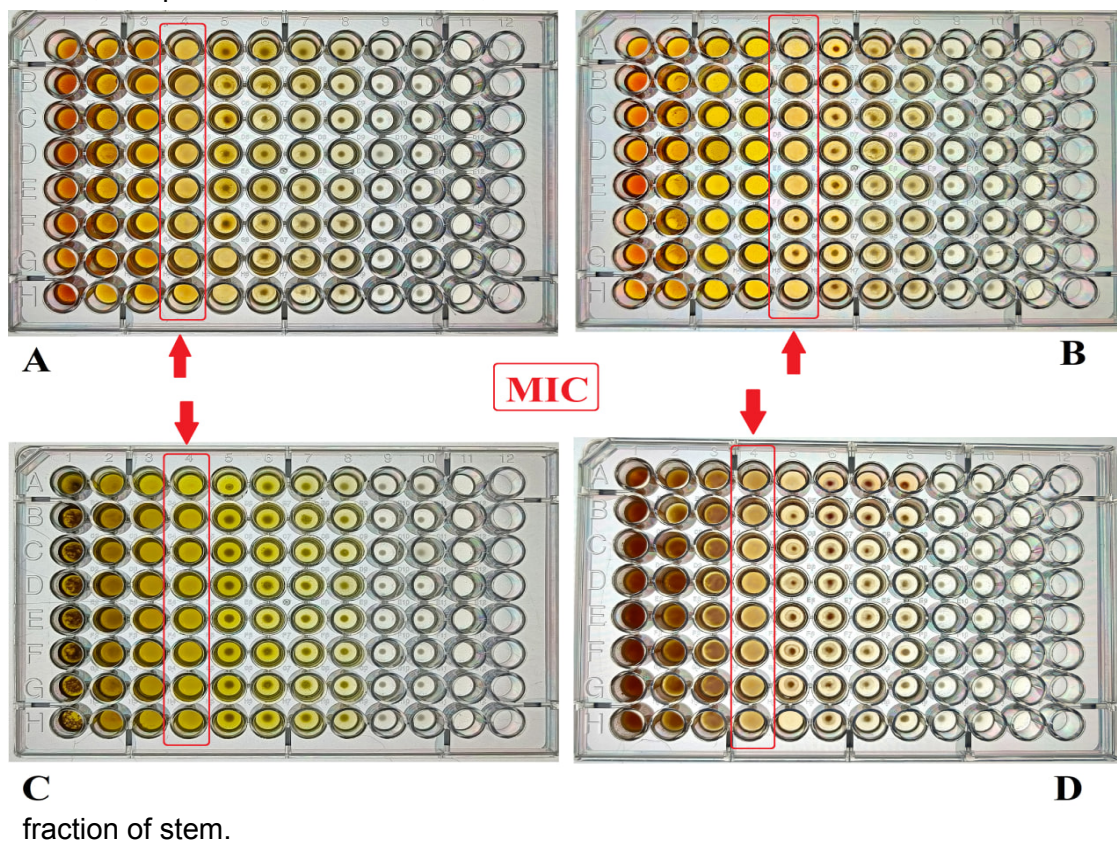


Figure S19 MIC of fractions against *P. aeruginosa*, in which A = phenolic fraction of leaf, B = phenolic fraction of stem, C = alkaloid fraction of leaf and D = alkaloid



fraction of stem.

Figure S20 MIC of fractions against *A. baumannii*, in which A = phenolic fraction of leave, B = phenolic fraction of stem, C = alkaloid fraction of leave and D = alkaloid fraction of stem.