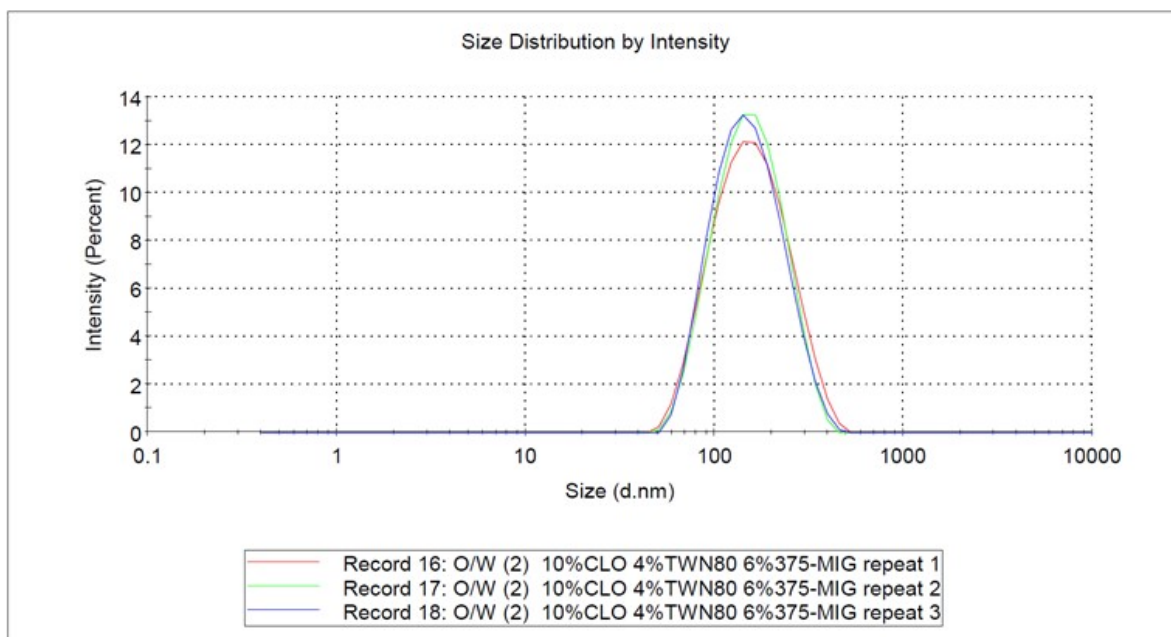


Figure S1. Chemical structures of the surfactants utilized to formulate CEO-NE and CEO-MEM-NE. (A) Represents the chemical structure of Tween 80 (adapted from Sigma Aldrich). (B) Represents the chemical structure of Imwitor 375 (adapted from Chemical Book). (C) Represents the chemical structure of PGPR surfactant (adapted from Chemical Book).

	CEO-NE		CEO-MEM-NE	
	Size \pm SD	PDI \pm SD	Size \pm SD	PDI \pm SD
Size in water	138 \pm 1.769	0.177 \pm 0.008	183.600 \pm 0.889	0.160 \pm 0.014
Size in PBS	130.850 \pm 2.333	0.176 \pm 0.009	169.400 \pm 1.100	0.169 \pm 0.008
Size in MHB	145.633 \pm 2.060	0.238 \pm 0.008	174.950 \pm 1.909	0.163 \pm 0.011

Table S1. Stability of NEs in PBS and MHB.

A)



B)

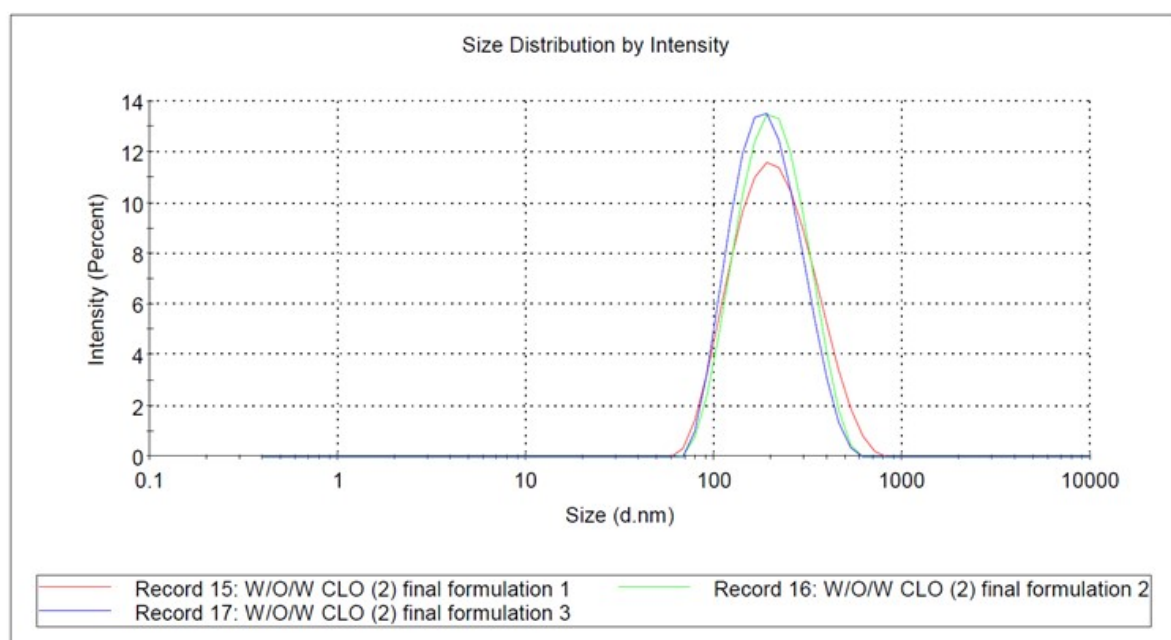


Figure S2. DLS traces for CEO-NEs and CEO-MEM-NEs. (A) Represents the DLS traces of triplicate measurements of CEO-NEs. (B) Represents the DLS traces of triplicate measurements of CEO-MEM-NEs.

Table S2. MIC and MBC of CEO aqueous solution and NEs against *K. pneumoniae* BAA-1705 using two different concentrations of TTC.

	MIC			MBC		
	NO TTC	0.005% TTC	0.05% TTC	NO TTC	0.005% TTC	0.05% TTC
CEO aqueous solution %	Nil	5	2.50	5	5	2.50
CEO-NE %	Nil	0.16	0.08	0.16	0.16	0.08
CEO-MEM-NE CEO % (MEM $\mu\text{g mL}^{-1}$)	Nil	0.08 (1)	0.08 (1)	0.08 (1)	0.08 (1)	0.08 (1)

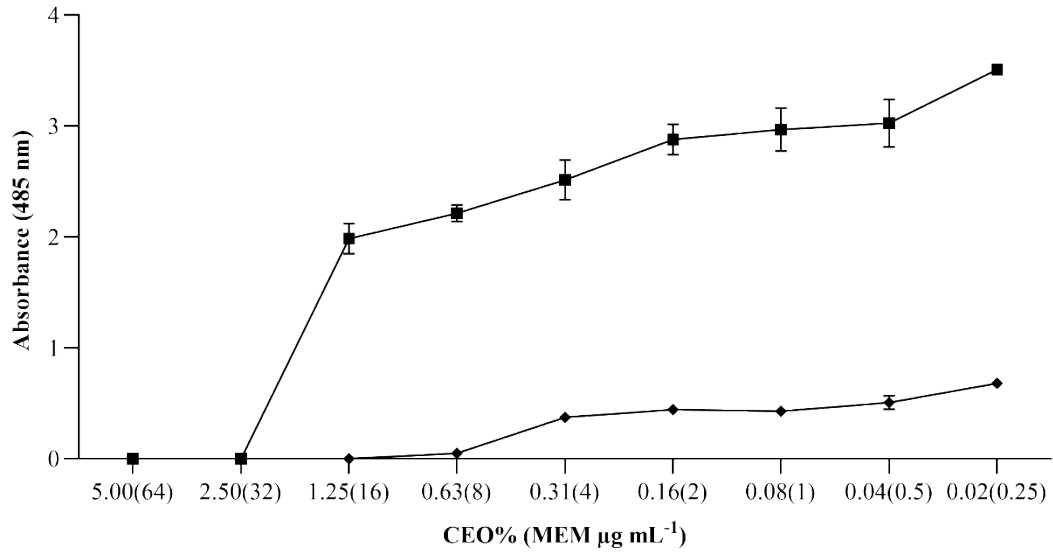
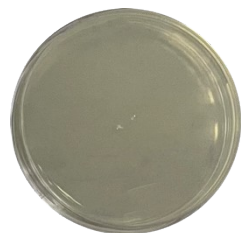
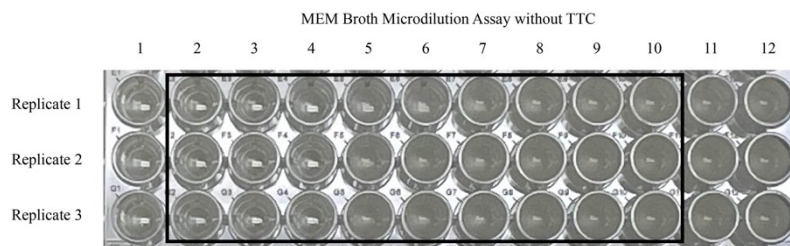
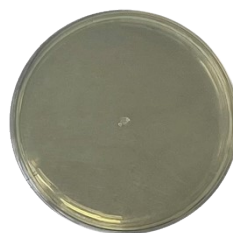


Figure S3. MICs of CEO aqueous solution and MEM against *K. pneumoniae* BAA-1705 with addition of 0.05% TTC. CEO aqueous solution (■), meropenem (◆).

A)



64 $\mu\text{g mL}^{-1}$ MEM



32 $\mu\text{g mL}^{-1}$ MEM

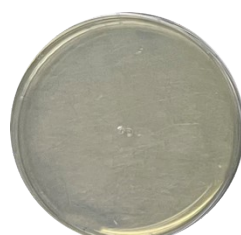
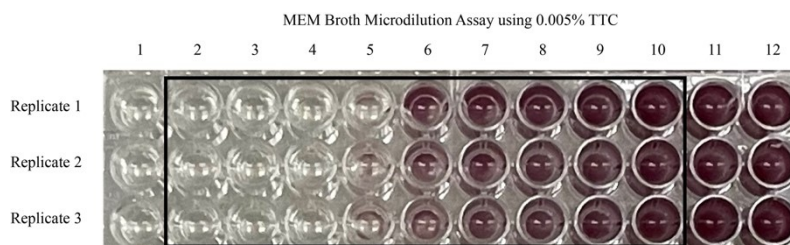


16 $\mu\text{g mL}^{-1}$ MEM



8 $\mu\text{g mL}^{-1}$ MEM

B)



64 $\mu\text{g mL}^{-1}$ MEM



32 $\mu\text{g mL}^{-1}$ MEM



16 $\mu\text{g mL}^{-1}$ MEM



8 $\mu\text{g mL}^{-1}$ MEM

C)

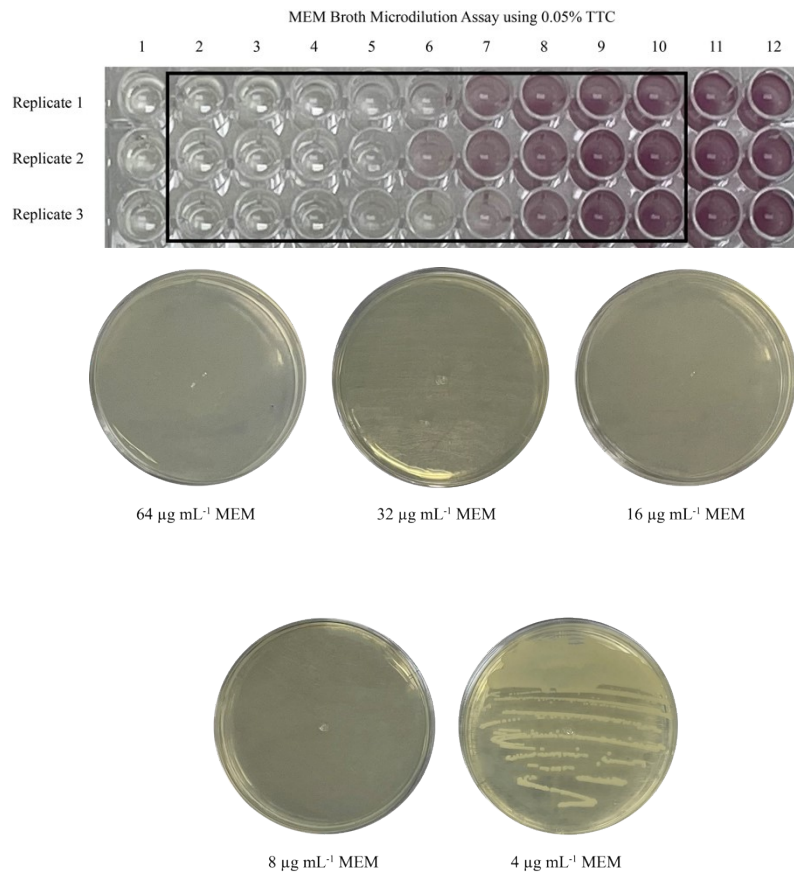
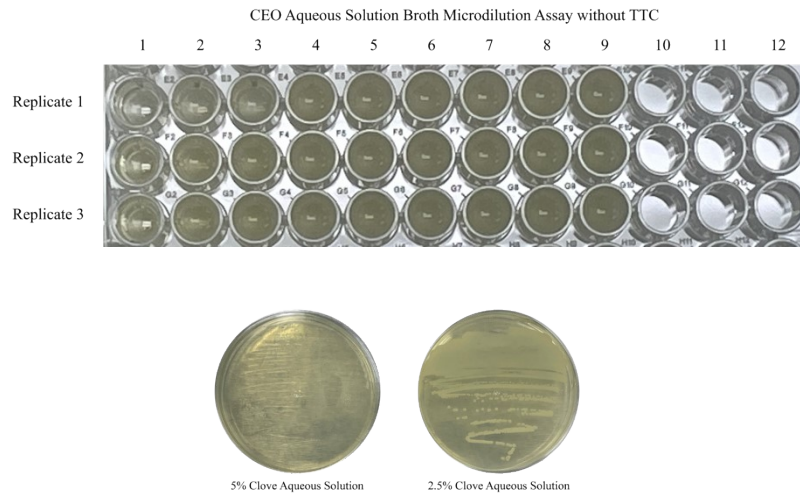
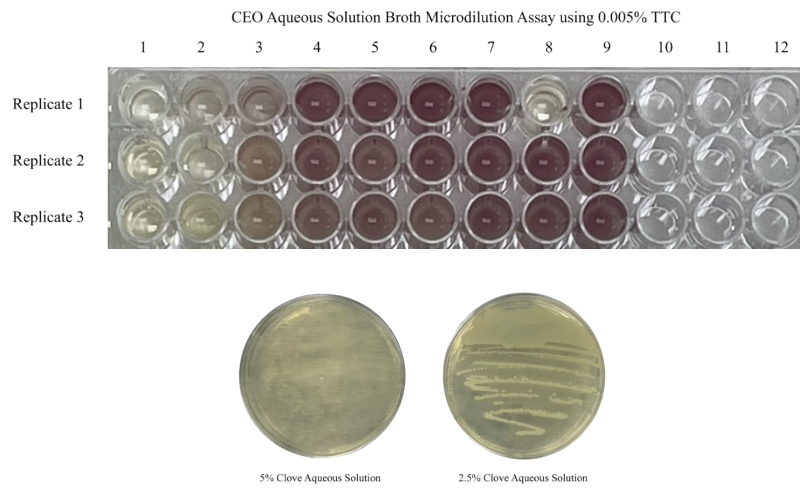


Figure S4. Broth microdilution assay and MHA subculture for the determination of MIC and MBC against *K. pneumoniae*. (A) MEM at different concentrations (64 - 0.25 µg mL⁻¹, starting from well 2 to 10) for the determination of MIC and MBC in TTC free condition. (B) MEM at different concentrations (64 - 0.25 µg mL⁻¹, starting from well 2 to 10) for the determination of MIC and MBC in 0.005% TTC. (C) MEM at different concentrations (64 - 0.25 µg mL⁻¹, starting from well 2 to 10) for the determination of MIC and MBC in 0.05% TTC.

A)



B)



C)

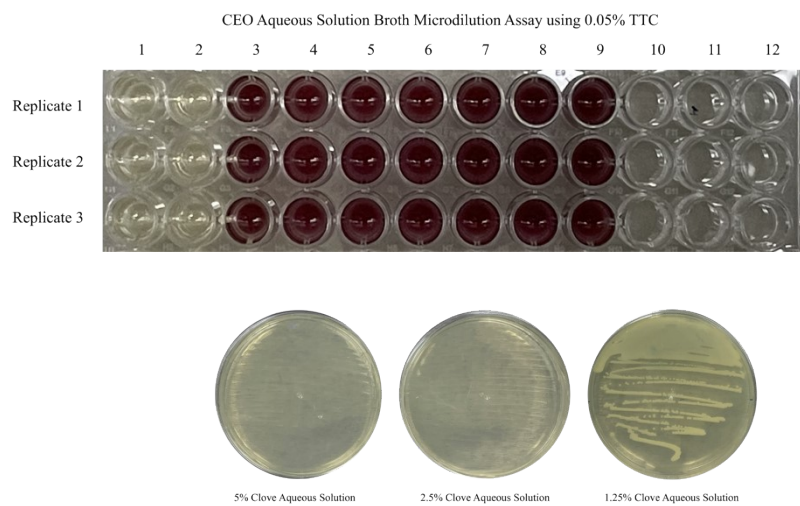
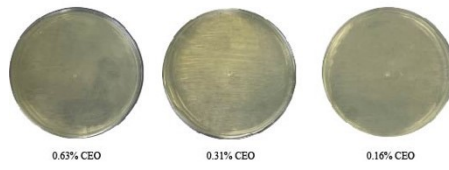
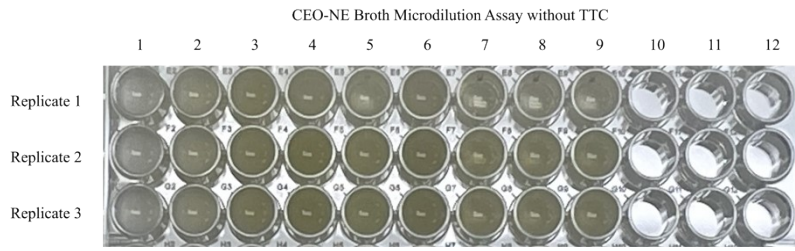


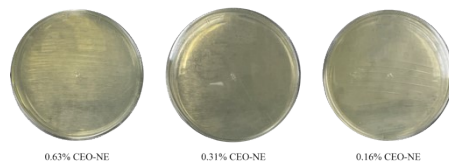
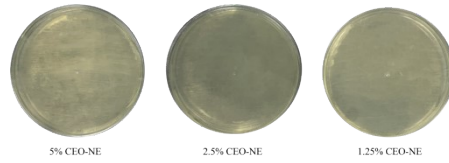
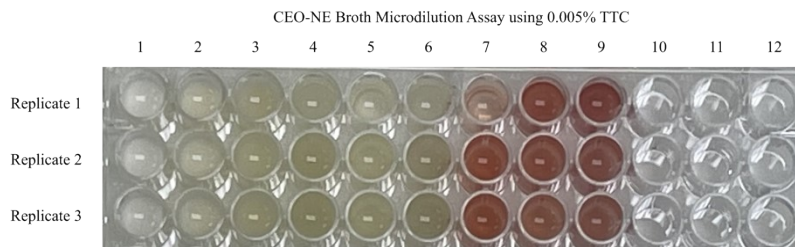
Figure S5. Broth microdilution assay and MHA subculture for the determination of MIC and MBC against *K. pneumoniae*. (A) CEO aqueous solution at different concentrations (5 - 0.02%, starting from well 1 to 9) for the determination of MIC and MBC in TTC free condition. (B)

CEO aqueous solution at different concentrations (5 - 0.02%, starting from well 1 to 9) for the determination of MIC and MBC in 0.005% TTC. (C) CEO aqueous solution at different concentrations (5 - 0.02%, starting from well 1 to 9) for the determination of MIC and MBC in 0.05% TTC.

A)



B)



C)

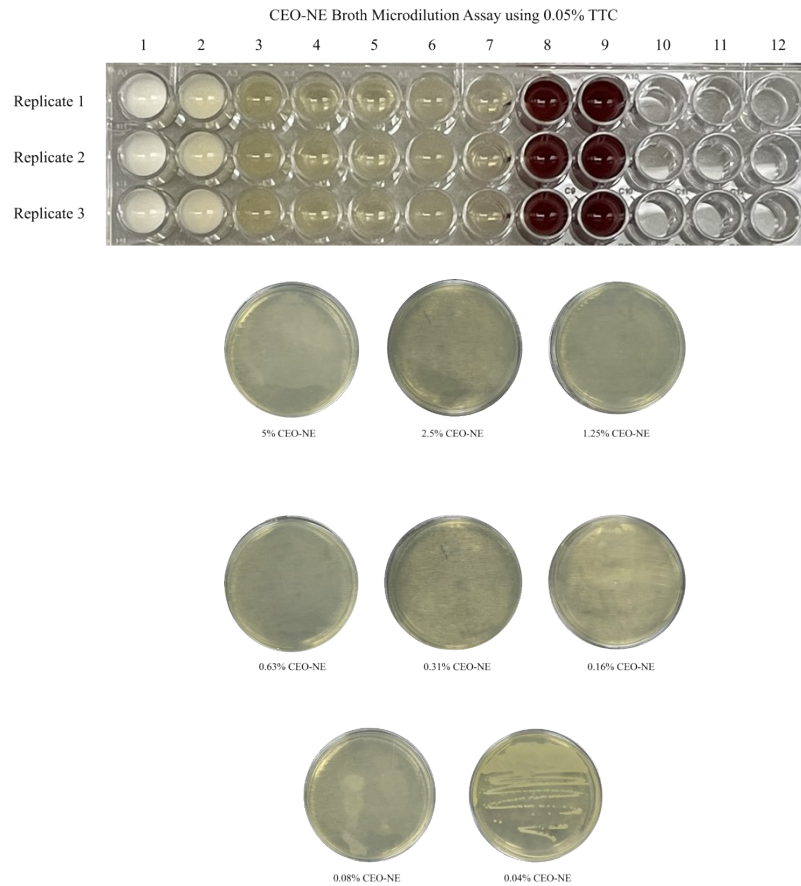
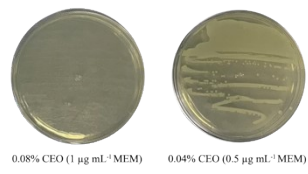
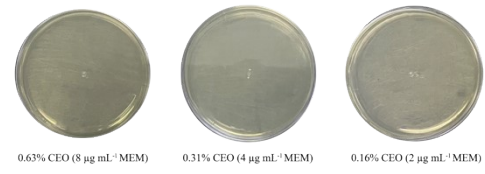
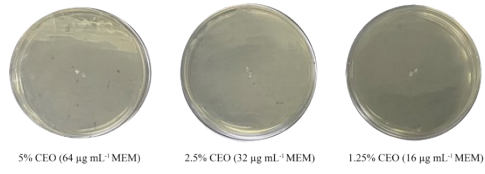
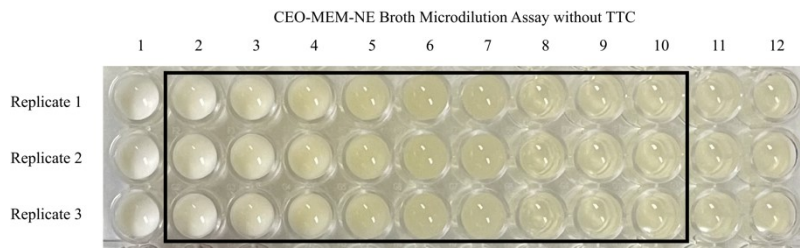
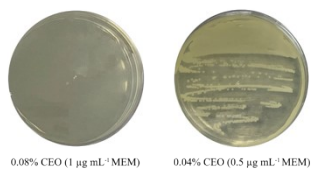
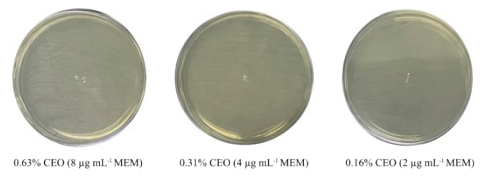
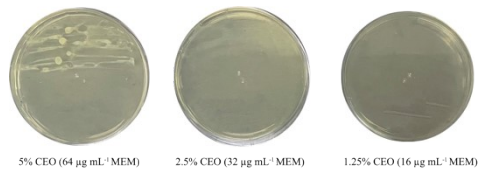
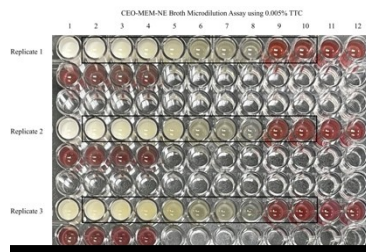


Figure S6. Broth microdilution assay and MHA subculture for the determination of MIC and MBC against *K. pneumoniae*. (A) CEO-NE at different concentrations (5 - 0.02%, starting from well 1 to 9) for the determination of MIC and MBC in TTC free condition (B) CEO-NE at different concentrations (5 - 0.02%, starting from well 1 to 9) for the determination of MIC and MBC in 0.005% TTC (C) CEO-NE at different concentrations (5 - 0.02%, starting from well 1 to 9) for the determination of MIC and MBC in 0.05% TTC.

A)



B)



C)

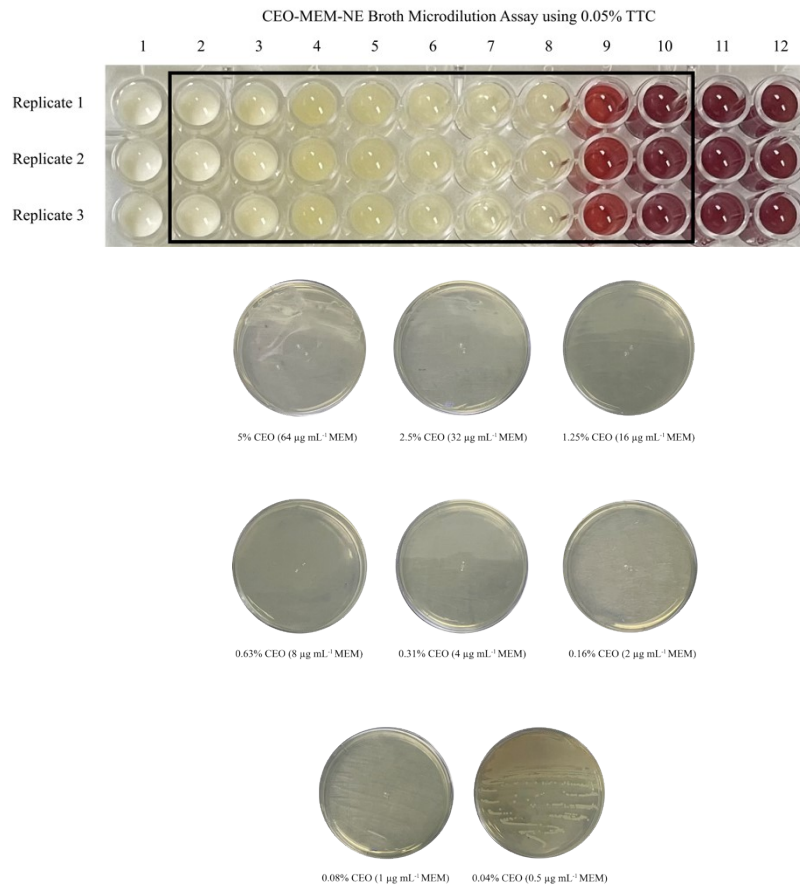


Figure S7. Broth microdilution assay and MHA subculture for the determination of MIC and MBC against *K. pneumoniae*. (A) CEO-MEM-NE at different concentrations (5 - 0.02% CEO and 64 - $0.25 \mu\text{g mL}^{-1}$ MEM, starting from well 2 to 10) for the determination of MIC and MBC in TTC free condition. (B) CEO-MEM-NE at different concentrations (5 - 0.02% CEO and 64 - $0.25 \mu\text{g mL}^{-1}$ MEM, starting from well 2 to 10) for the determination of MIC and MBC in 0.005% TTC. (C) CEO-MEM-NE at different concentrations (5 - 0.02% CEO and 64 - $0.25 \mu\text{g mL}^{-1}$ MEM, starting from well 2 to 10) for the determination of MIC and MBC in 0.05% TTC.

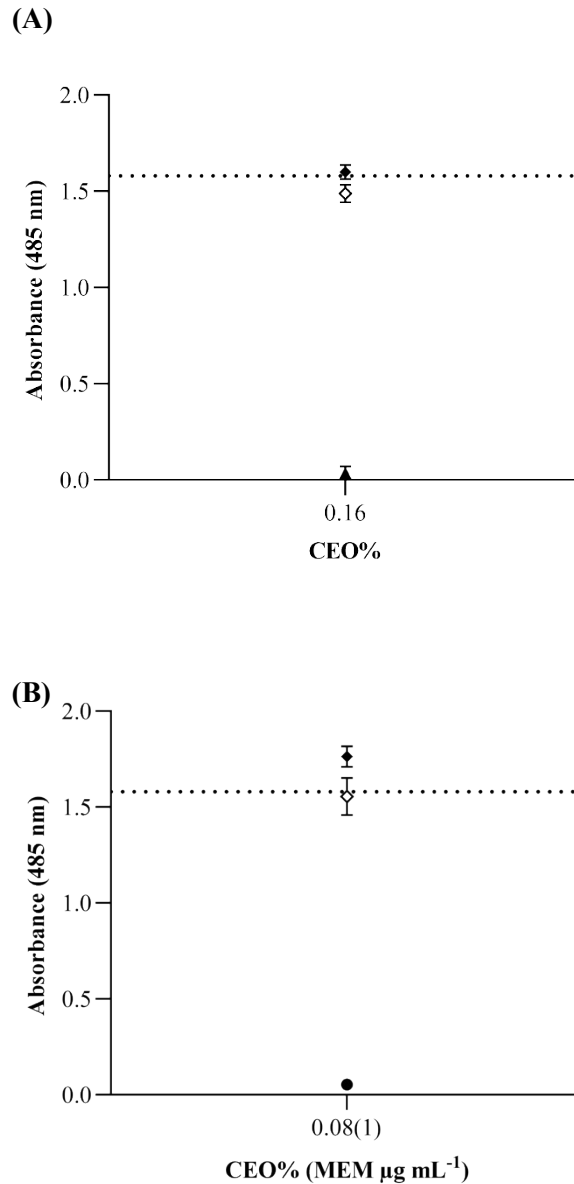
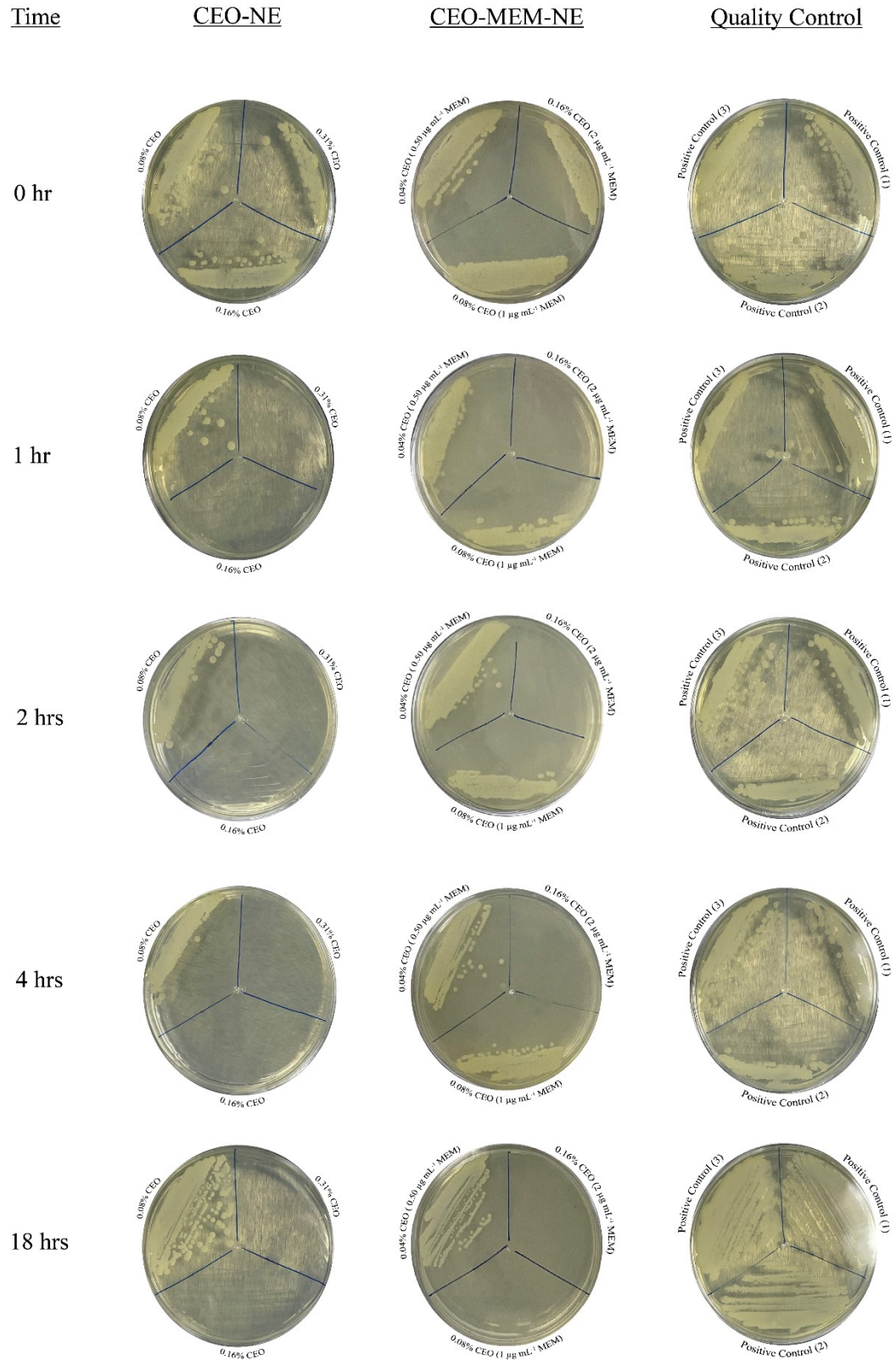
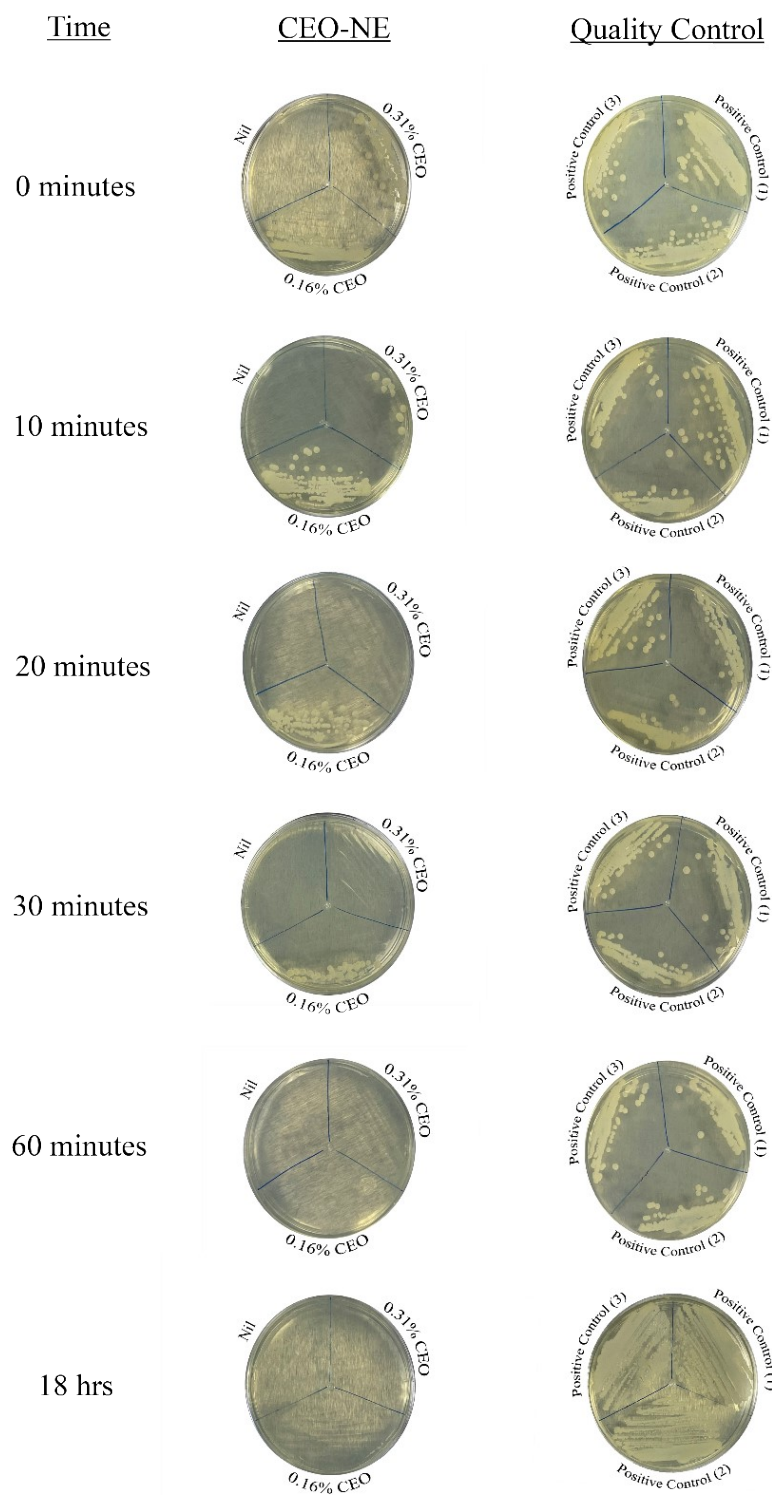


Figure S8. Antimicrobial activity of surface-active agents in comparison to the final formulations, CEO-NE and CEO-MEM-NE, against *K. pneumoniae* BAA-1705 at MIC value. **(A)** Absorbance level of surface-active agents (Imwitor 375-Tween 80 (◆)) and CEO-NE (▲) formulation against *K. pneumoniae* BAA-1705. **(B)** Absorbance level of surface-active agents (Imwitor 375-Tween 80-PGPR (◇)) and CEO-MEM-NE (●) against *K. pneumoniae* BAA-1705. The dotted line represents the value of positive control, untreated *K. pneumoniae*.

(A)



(B)



(C)

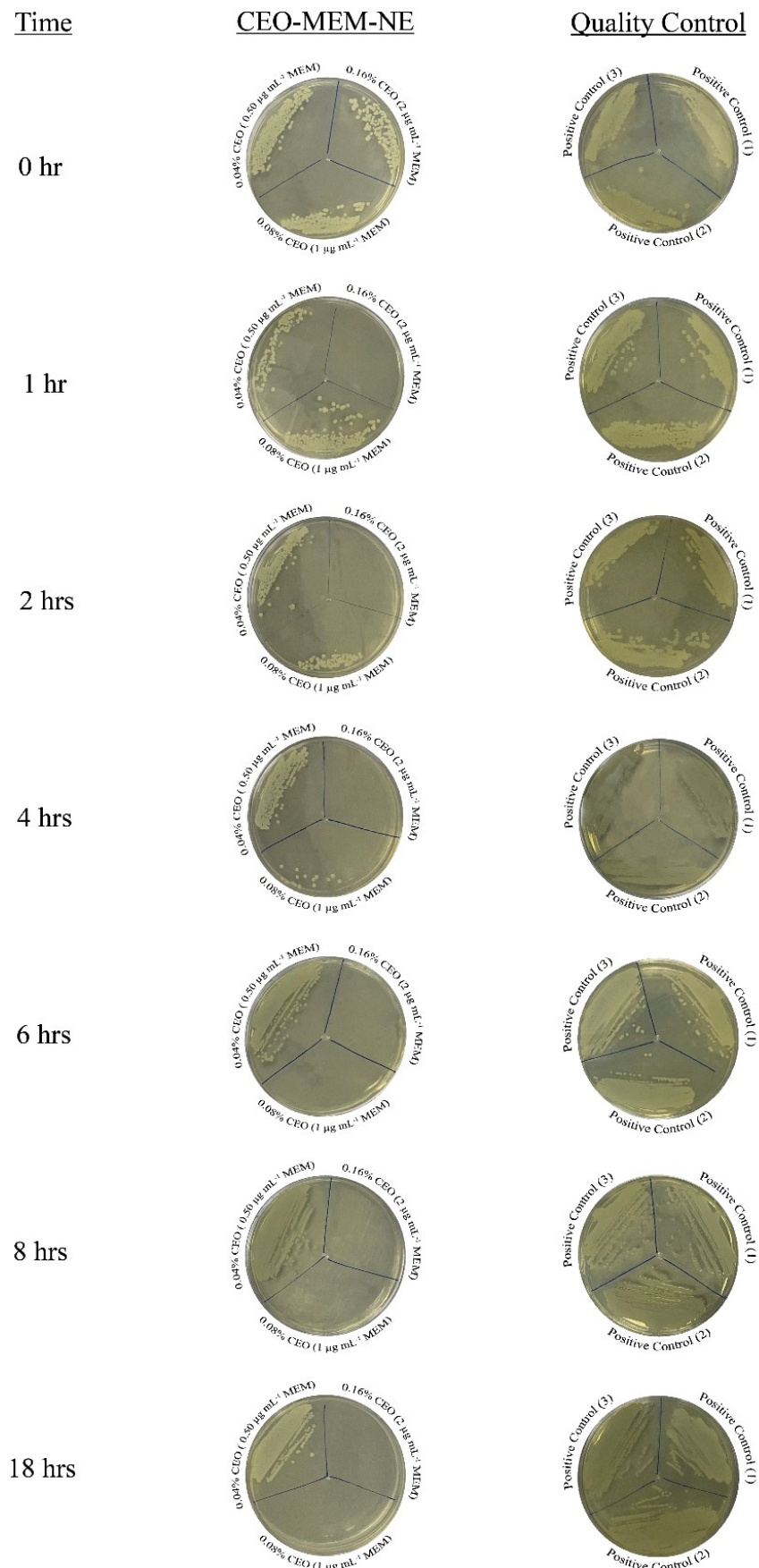
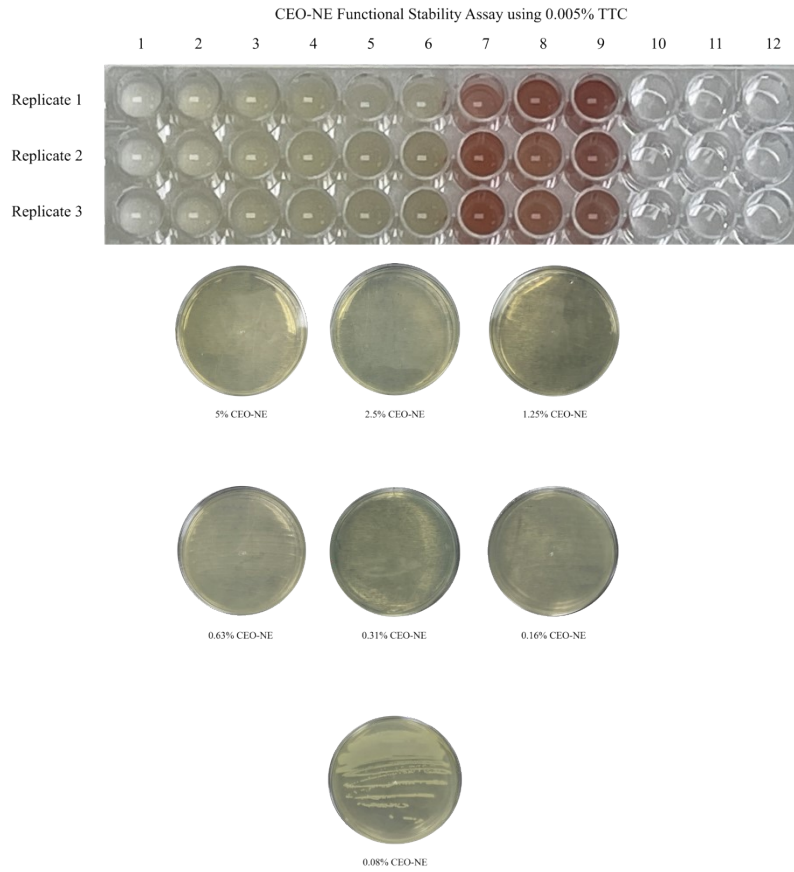


Figure S9. Time kill assay for CEO-NE and CEO-MEM-NE. **(A)** Viable bacterial count at MICs, two-times MICs, and one-half MICs after 1, 2, 4, and 18 h. **(B)** Viable bacterial count for CEO-NE at MICs and two-times MICs at 10 minutes intervals for one hour. **(C)** Viable bacterial count for CEO-MEM-NE at MICs, two-times MICs, and one-half MICs at 1, 2, 4, 6, 8, and 18 h.

A)



B)

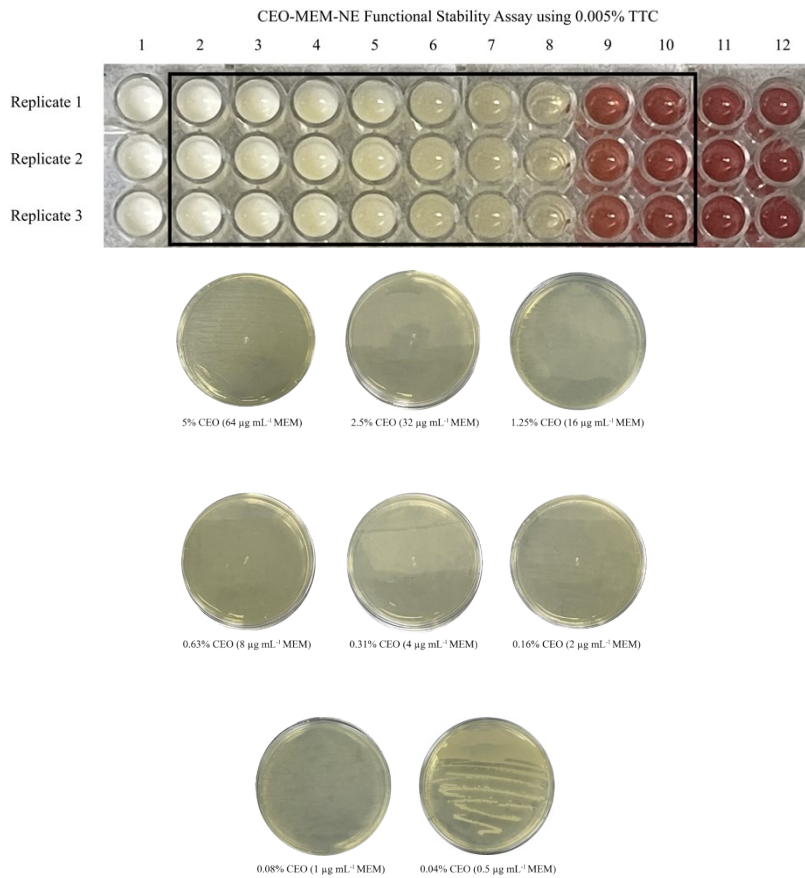


Figure S10. Broth microdilution assay and MHA subculture for the determination of MIC and MBC for the two weeks antimicrobial functional stability test of NEs against *K. pneumoniae*. (A) Represents the MIC and MBC of CEO-NE stored for two weeks at 4°C (B) Represents the MIC and MBC of CEO-MEM-NE stored for two weeks at 4°C.