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RESEARCH ARTICLE

Iraqibacter Chimera Acinetobacter baumannii with Multi Stress Hardening Resistance to Antibiotics and Ultraviolet Irradiation

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ABSTRACT

Emergent biofilm infectious foci of A. baumannii recovered from the local dairy chain and human UTI cases in Baghdad evolved as a multi-stress hardening denominator with broad-spectrum genetic plasticity that catastrophic resistance to versatile and diverse antibiotics cascaded quorum sensing stress stimuli to proceed to epigenetic tolerance behaviour to ultraviolet irradiation. Multiple drug resistance (MDR), extended spectrum β-lactamase (ESβL), and extensively drug-resistant bacteria (XDR) opaque versus translucent colonial growth patterns phenotypes cascaded via catastrophic tolerance behaviour to ultraviolet irradiation decontamination strategy were predominant and resident in most recovered isolates with prohibited sequels from selected and scanned districts in Baghdad. Samples collected randomly from Abu-Ghraib, Al-Sadrya, and Al-Fudhaliyah sectors were cascaded by verified modified processing protocols from February (2022) to proceed to February (2023). A HiCrome™ Acinetobacter Agar (M1938) with multidrug resistant (MDR) selective supplement vials either (FD271) or (FD335) was dependent on selective and differential isolation dogmas, then it was confirmed by VITEK®2 test. Experimental design was proceeds within veterinary public health / milk hygiene lab. Assessment risk design was aligned with urinary tract infection cases from associated worker and nosocomial hospital individuals. Recovery and segregation documentary records unveiled isolation of twenty-seven (27: 4.285 %) out of colloquy sixty and thirty-six (636) dairy samples units cascaded by four isolates (4: 11.11 %) out of thirty-six (36) urine samples of UTI patients from Baghdad. In conclusion: residence, frequency, and distribution patterns of emergent biofilm superbugs within the local dairy chain and from human UTI cases in Baghdad.

INTRODUCTION

Emergent *A.baumannii,* as an ESKAPE chainsaw puzzle pathogen (*Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa*, and *Enterobacter species*), is a group of pathogens with a high rate of antibiotic resistance that are responsible for the majority of nosocomial infections. Colloquially, *A. baumannii* is referred to as "Iraqibacter" due to its seemingly sudden emergence in military treatment facilities during the Iraq War. It has continued to be an issue for veterans and soldiers who served in Iraq and Afghanistan.

During the COVID-19 pandemic, coinfection with *A. baumannii* secondary to SARS-CoV-2 infections has been reported multiple times in the literature (CHARM 2023; Dewachi 2019; Ghaffoori Kanaan et al. 2020; F. Gordillo Altamirano et al. 2021; F. L. Gordillo Altamirano and Barr 2019). Broad-

spectrum ability cascaded by genetic plasticity in learning, stress adaptation, developing and transferring resistance to diverse and versatile stimuli like antibiotics, radiation, resident, deposited, and displayed by genetically well-equipped Chimeras *A. baumannii* as an emergent superbug can infect both humans and animals, causing difficulties in treatments like UTI, pneumonia, mastitis, etc. (Elwakil et al. 2023; Mohamed et al. 2022; Saleh Ahmed, Abdulrahman, and Taha 2023; Wareth, Neubauer, and Sprague 2019). An artificial intelligence (AI) deep learning machine could satisfy discovery of new combating antibiotics such as the shotgun "Abaucin" to fight struggling denominator *A. baumannii* (Gary Liu, Denise B. Catacutan, Khushi Rathod, Kyle Swanson, Wengong Jin, Jody C. Mohammed, Anush Chiappino-Pepe, Saad A. Syed, Meghan Fragis, Kenneth Rachwalski, Jakob Magolan, Michael G. Surette, Brian K. Coombes, Tommi Jaakkola, Regina Barzilay 2023).

MATERIALS AND METHODS

Biofilm identification

We transferred and diluted an overnight-cultured *A. baumannii* in dsTSBYE at 37 °C on a microtiter plate. We specifically added 0.5 ml of the culture, which had a concentration of around log5 McFarland, to each well containing five ml of freshly prepared dsTSBYE. We tested each individual sample three times. As a result, wells that were seen without dsTSBYE were used as negative controls compared to positive controls of human-primed strains. We placed the plates in an incubator at 37 °C for 48 hours. We did this to facilitate the formation of visible, clear biofilm structures made up of sticky poly-mucoid layers and dots. We observed that the size of these structures increased towards the edges and bottom of the wells. In addition, the culture was extracted and the plates were washed three times with delicate phosphate-buffered saline to eliminate cells that were not adhering, and then dried while inverted. We treated the adherent biofilm with a 2% solution of sodium acetate for five minutes. It was then stained using a double modified solution consisting of 20% biofilm-crystal violet and 20% biofilm-safranin. The staining process lasted between 15 to 30 minutes, depending on the secretory power of each clone, as well as the sensitivity and specificity of each dye. Next, we removed the unstained residue and rinsed the wells three times with PBS. We left the plates undisturbed for 2–3 hours to allow them to dry. Afterwards, we photographed the layers and dots of biofilm present at the bottom and interior rims of the wells, measured them, and evaluated them based on the extent of formation, stain type, and isolate type. A clear outcome became apparent within a few hours to a day after the generated biofilm had completely dried. We can measure the optical density (OD) of a stained adherent biofilm using a micro-ELISA auto reader at a wavelength range of 570–600 nm, or we can use a real-time impedance-based cell analyzer, biosensors, fluorescence microscopy, or scanning electron microscopy. We can use verified approaches to calculate cut-off values for biofilm generation (Hashem et al. 2017; Kırmusaoğlu 2019; Larimer et al. 2016; Stepanović et al. 2007). Freeman et al., 1989 outlined an alternate approach for detecting biofilm growth, which involves the utilization of a specifically formulated solid medium. To enhance the results, BHI agar was substituted with a more potent dsTSBYE76 medium (10 g Tryptone Soya Agar + 1 g Yeast Extract \ 100 ml d. w.) enriched with 5% sucrose (5 gm \ 100 ml) and Congo red (10 gm \ L). Congo red is introduced into the media either directly or as a concentrated aqueous solution, and then subjected to autoclaving at a temperature of 121°C for a duration of 15 minutes. The medium centers of the colonies carry out this process independently. The colonies became darker and lost their dry crystalline structure, indicating an intermediate outcome. We conducted the experiment in duplicate and replicated it three times.

Antibiotic susceptibility testing (AST)

It is typically performed to ascertain the best effective antibiotic for treating a bacterial infection in a living organism. A semi-quantitative method, known as the Kirby-Bauer scheme, utilizes diffusion. This entails placing small discs containing various antibiotics or impregnated paper discs in different areas of a nutrient-rich agar plate, which provides an environment for bacterial growth. The

antibiotic will spread evenly over the surrounding region of each tablet, resulting in a noticeable circular area where the bacteria have been destroyed. The antibiotic concentration was highest at the center and lowest at the border of the zone, indicating that the diameter is indicative of the Minimum Inhibitory Concentration. According to the guidelines set by the national committee of clinical laboratory standards (NCCLS), which was previously known as the clinical laboratory standards institute (CLSI 2022) guidelines were followed in this account of the Kirby Bauer disc diffusion method (Campbell 2013).

Ultra Violet (UV) light irradiation

A laboratory experiment was conducted to assess the susceptibility of multidrug resistant isolates of *A. baumannii* recovered from both dairy chain and human sources (specifically, urinary tract infections and carriers). For the test, direct and indirect UV light were used to sterilize TSAYE cultures and KDD UHT white whole milk tetra packs that had five logs of *A. baumannii* on them. The PCR primed genotypes of A. baumannii, which were resistant to multiple drugs, were enriched and enhanced with dsTSBYE overnight at 37°C. They were then titrated and standardized using MacFarland opacity tubes in a series of droplet and roll-pour plate techniques. This process resulted in a dose dependent curve of five logs 105 CFU.ml-1 for each isolate. We subjected the recently prepared plates on dsTSAYE to a wavelength at a distance of approximately fifty cm. Since UV light beams cannot penetrate coverings, we unsealed but did not cover the key checkpoint plates. We included both inoculated but non-irradiated control cultures and irradiated but non-inoculated control plates for this verified achievement. We also included *A. baumannii*-contaminated KDD UHT white whole milk tetra packs. We thoroughly mixed 25 ml of UHT milk in these tetra packs with 100 microliters of freshly prepared and titrated *A. baumannii* solution, achieving a concentration of half McFarland five logs. We subjected three original samples from each culture to a prolonged sixty-minute UV radiation exposure. We placed the irradiated cultures inside a hood and covered them with their respective covers. They were then incubated at a temperature of 37°C for duration of 24 hours. We compared the radiation susceptibility index of the chosen isolates to the standard zones of inhibition of prescribed antibiotics. We selected and standardized these drugs as a control parameter, adhering to the current guidelines from CLSI and utilizing standard antibiotic tables (CLSI 2022). All UV light processed units with alternate pairs of control positive and negative trails were cultured directly in the plates and indirectly from processed contaminated UHT milk units and replicates cascaded by roll-tube pore plate techniques, followed by incubation at 37 C for (18-24) hours. Indirect hurdling with cooling processed contaminated UHT milk units inside a refrigerator at 4 C, then repeated culturing on TSAYE, three times episodes of culturing with replicates, then recording counting results in mean logs.

Statistical Analysis

Biostatistical integration was a predominant tool for deciphering at confidence intervals of 95 and 99 % in which, all observed results were analyzed by a statistical analysis system (SAS, 2018) software program throughout interconnected values of significant and non or insignificant probability index of $p \leq 0.05$ and $p \leq 0.01$ via dependent analysis of variance (ANOVA) with least significant difference (LSD) cascaded by Chi square ($\chi 2$) to understanding normal distribution nature of samples and their replicates. Significant values mean significant clinical observations and calculated trials of experimental design. Not always insignificant results means they were not important clinically or scientifically in accordance to pairs of null and alternative experimental hypothesis design but this is dependent primarily on virulence indices by type of evolved isolate i.e., their genetic makeup in terms of genetically modified microorganisms in food chain with other interconnected predisposing factors and ecosystems. **In conclusions:** clinically observed trials were very important in spite of their statistical values were not significant in some situations.

RESULTS and DISCUSSION

Climate change is responsible for the emergence and revival of stress-adapted *A. baumannii* entities, as well as the ESKAPE chainsaw puzzles of multidrug resistance prohibited chains *(Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, and Enterobacter aerogenes*). The Health Advanced Research Projects Agency (HARPA) has documented this phenomenon. The new experience of struggling is predicting a multi-stress adaptation phenomenon in A. baumannii, a nosocomial human semiconservative pathogen. These entities undergo phase or phenotype variation and transform under stress adaptation from a host-specific phase to an adaptive, versatile phase. They reside on the food chain through unknown survival and revival mechanisms, such as CRISPR-CAS gene sharing strategies. These entities reside within the cascaded human-dairy ecosystem in Baghdad, leading to the emergence of "CHIMERAS."

These emergent entities were encountered in this special verified cross sectional topic torment from locally produced Cows dairy cascaded series prevalent inside Baghdad province. These investigated biohazard denominators dogmas were resident and deposited in frighteningly strange frequency and distribution growth patterns within randomly experimentally scanned sectors of Al-Sadrya, Abu-Ghraib and Al-Fudhaliyah. Verified scanned samples patterns with ecomaps segregation categorized criteria including a built-in modified design for testing null cascaded alternative hypotheses about lunges cascades of seven predominant Iraqi dairy chain brands of raw milk, fresh ropy yogurts, curd soured yogurts, fresh soft cheeses, brined soft cheeses, butters, and creams; cascaded by associated cross-linked cases of Human individuals infected and carriers (dairy workers and normal costumers) with urinary tract infections cases (UTI). Similarity index patterns of *A. baumannii* versus recorded upstairs foodborne zoonotic reverse zoonotic transmissible pathogens cascaded by UTI cases series were recorded and documented inside Iraqi ecosystems with diverse and versatile epidemiological segregation ecomaps (Al-Samaree and Al-Khafaji 2016; AL-Shamary and Mounam 2011; Ali H. A. Al-Shammary 2015; Ali Hassan Ahmed Al-Shammary 2019; Ali Hassan Ahmed Al-Shammary and Mounam 2017; Al-shammary and Mounam 2023; ALYAIS 2019; Dewachi 2019; Pandey, Mishra, and Shrestha 2021; Razooqi and Al-shammary 2020; Reda 2019; Turky, I., and Nader 2018).

The degree of virulence index in verified isolates can be determined by analyzing the integrated quantities, records, and dimensions of blue-red configured circles and dots inside the cupules of negatively charged microtiter plates, as shown in Figure "1,2". The recovered isolates' biofilm index classifies them into a resilient group of plasmid twisters, which includes a series of organisms collected from all districts. We found the biofilm producers, coupled with chromosomes and transmitted through plasmid transfer, in all confirmed sectors associated with male urinary tract infection patients. Within the identical isolated environment, derived from the same brand and sector, there exist offspring that exhibit diverse sub-phenotypes or offspring that exhibit the same phenotype but display distinct behaviors. DNA and plasmid mutations contribute to these variations, leading to the emergence of both robust and red-to-pink slow producers, as well as white non-slime producers. These mutations have led to the emergence of a wide range of adaptable and multifaceted organisms with various physical characteristics. Researchers found unusually high levels of contamination in Chimeras from raw milk, fresh and brined soft cheese, butter, and cream sourced from Abu-Ghraib. We also identified raw milk, butter, and cream from Al-Fudhaliyah, along with fresh soft cheese and butter from Al-Sadrya, as sources of contamination.

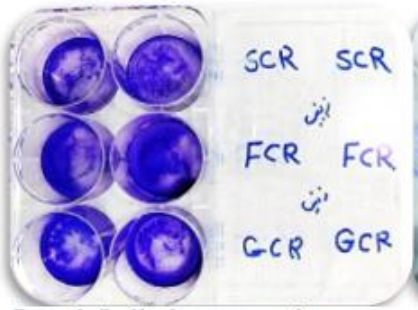

Figure 2: Biofilm by microtiter plate assay.

Figure 2: Biofilm texture on modified Congo red agar reveal phenotypic chromosomal red vs plasmid dark twisters.

Interconnected gene sharing strategies within biofilm ecosystem with quorum sensing and sigma factors orchestrated throughout conjugation bridges of transmissible plasmid twisters, equipped transformation with foreign external DNA and transduction with inserted and redirected augmented prophages to become an abnormal emergent complex polysaccharide built-in biofilm entity housekeeping behavior of Chimeras. Diverse and versatile recovered and recorded isolates from different sampled units and districts reflect plasticity of genetic materials of isolates with transmission behaviors from epigenetic transient stress adapted environments surrounding the genes as drift tolerance intermediate cascade to switching to real genetic permanent evolved mutations as shift resistance sequels. Matrixes mega and micro habitual biofilm growth patterns built-into the behaviors of microbial communities reflect dangerous interconnected heterogenic plasticity in programed and regulated virulence strategies built within biofilm barrier capsule or Mycobacterium complex wax-D like environment and proceed outstandingly to rebuild a new struggling. Synergistic recycling of independent and dependent ATP components within biofilm is necessary for these creatures to combat stressors with gradient stress adaptation until they coordinate the stress hardening phenomenon. Problematic emergency HACCP strategy for these priority items is reflected in difficult clearance conditions of these enhanced specified persisters with regular controlled hygienic processing like preservation and hurdling decontamination. infectious foci for bioterrorism (Pandey, Mishra, and Shrestha 2021; Pandya, Sur, and Kotecha 2022).

An evolutionary stress adaptation cascade involving hardening among various and flexible competing strains inside biofilm necessitates sophisticated sensing regulation. Ecobiota use complex regulatory networks to cope with stress, but the function of these networks in natural habitats is gradually understood. The competition sensing hypothesis states that microbe stress response systems can serve to detect ecological competition, but learning regulatory responses in diverse communities is stimulating (Lories et al., 2020; Rashid et al., 2023). Stress response behavior in microbial community requires adaptation to environmental changes such as structural modification in proteins machines, mRNA-ribosome coordinated stability cascaded with built-in accumulation of guanosine phosphate, guanosine tetraphosphate and guanosine Penta phosphate to trigger changes in gene expression (Begley and Hill, 2015; Kanval et al., 2024), as well as bimodule regulators involving membrane-associated histidine kinase and cytoplasmic response regulators. Histidine kinase senses alterations in an environmental restriction constraint and cooperates with associated response regulators to effects changes in cellular physiology (Begley and Hill 2010, 2015). Examples include PhoPQ in *Salmonella* (Groisman and Kato 2008). Significant diversity within family of *A. baumannii* regulatory integrated stress adaptation genetic loci (integrons and chaperones) reflect genetic plasticity and shifting transmission during translocation from clinical case to contamination phase in which, dependent and independent genes expression and transformation sharing mechanisms occur (Begley and Hill 2015).

Susceptibility Patterns Index of recovered *A. baumannii* from dairy chain and Human UTI for selected antibiotics according to CLSI tables (2023). Recorded topic resistance profile (MDR, ESβL, XDR) to selected antibiotics as in tables (1), and Figure "3,4" segregated and categorized as multidrug resistant recovered isolates except to moderate susceptibility to Meropenem Carbapenem, Norfloxacin and Aztreonam. All recovered isolates were highly resistant to all verified antibiotics from all sectors except some clones from Al-Sadrya that owned majority of isolates. Sophisticated complexity growth patterns (opaque versus translucent colonial phenotypes) within biofilm of most isolates predominant due to sensitization and upgrading regulations of chromosome, plasmids, pathogenicity islands, quorum, sigma factors, etc. To verify resistance mode with broad-spectrum plasticity mechanisms orchestrated to counter act the efficacy mode of tested antibiotics (bacteriostatic and bactericidal). The results of VITEK2 for antibiotics were complementary to the results of augmented Kirby Bauer disc diffusion method in terms of susceptibility limits associated with calibration of minimum inhibitory concentration (MIC) and maximum bactericidal concentration (MBC) for targeted denominator.

Table 1: Cascaded susceptibility index for selected antibiotics against recovered* A. baumannii *isolates from dairy chain in Baghdad.

Topic **District**	**PCR** **Primed Topic**	**Antibiotics Patterns**		Chi-Square: χ^2 (P-value)
		Susceptible	Resistant	
Abu-Ghraib	6 **Ba**	0 (0 %) **Bb**	6 (100 %) **Ba**	5.890 * (0.0297)
Al-Fudhaliyah	6 **Ba**	0 (0 %) **Bb**	6 (100 %) **Ba**	5.890 * (0.0297)
Al-Sadrya	15 **Aa**	3 (20 %) **Ab**	13 (80 %) **Aa**	6.250 * (0.0124)
Total	27	3 (11.11 %)	25 (88.88 %)	17.28 ** (0.0001)
Chi-Square: χ^2 (P-value)	**---**	**1.283 NS (0.209)**	**3.962 NS (0.137)**	**---**
* (P≤0.05), ** (P≤0.01).				

A,B: Significant differences vertically among districts for selected antibiotics susceptibility at (p≤0.5).

a,b: Significant differences horizontally within district for antibiotics susceptibility at (p≤0.5).

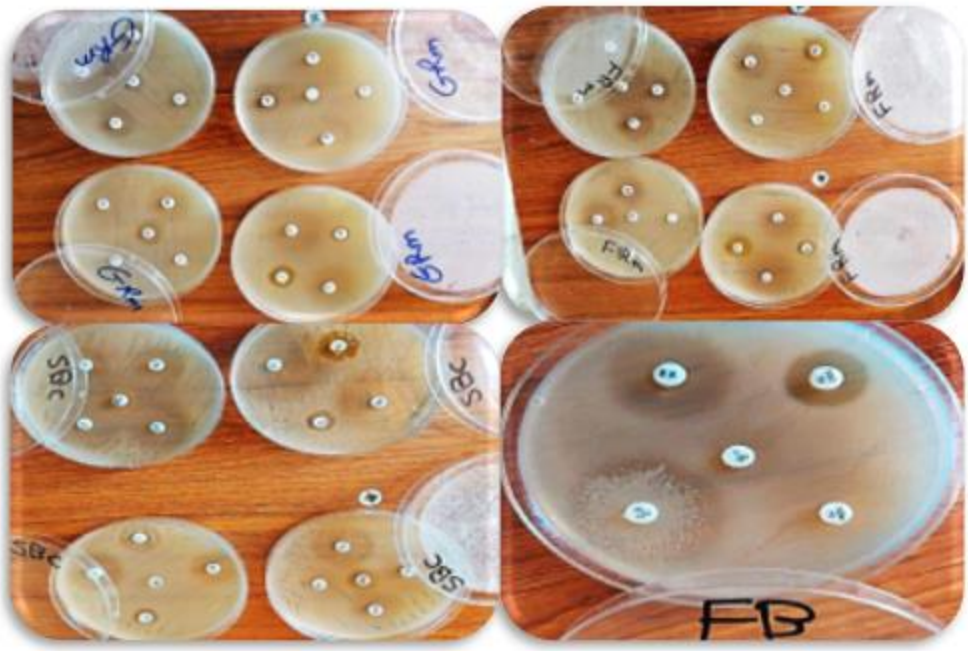

Figure 3: Antibiotics resistance in A. baumannii recovered from dairy chain & UTI patients in Baghdad.

Susceptibility Information	Card:	AST-N222	Lot Number:	6221819203	Expires:	Nov 19, 2022 12:00 CST
	Status:	Final	Analysis Time:	9.73 hours	Completed:	Mar 28, 2022 23:10 CDT

Antimicrobial	MIC	Interpretation	Antimicrobial	MIC	Interpretation
Ticarcillin	>= 128	R	Amikacin	<= 2	S
Ticarcillin/Clavulanic Acid	<= 8	S	Gentamicin	<= 1	S
Piperacillin	>= 128	R	Tobramycin	<= 1	S
Piperacillin/Tazobactam	<= 4	S	Ciprofloxacin	<= 0.25	S
Ceftazidime	<= 1	S	Pefloxacin		
Cefepime	<= 1	S	Minocycline	4	S
Aztreonam	<= 1	*R	Colistin		
Imipenem	<= 0.25	S	Rifampicin		
Meropenem	<= 0.25	S	Trimethoprim/ Sulfamethoxazole	<= 20	S

Figure 1: Antibiotics susceptibility patterns of A. baumannii recovered from Dairy Chain & UTI patients in Baghdad by VITEK®2. Adopted from ASCO center (Harthiya, Baghdad).

Modified sophisticated and redirected interconnected genetic mechanisms in antibiotics resistance with epigenetic temporary tolerance drift behavior cascaded by genetic permanent resistance shift of foodborne and waterborne pathogens cascaded by genes sharing behaviors and transmission within food chain and waters ecosystems via conjugated plasmids, foreign DNA fragments transformation and CRISPR-CAS prophages transduction. Uropathies UTI invaders validate extensive resistance to third-generation cephalosporins in which, clinical categorized as MDR, ESβL and XDR. Novel antibiotics trials combating these struggling but later and due to modified resistance strategies cascaded by emergent quorum sensing, stress adaptation and stress hardening for transmission of

stress resistance by verified stimuli to ending in multiple stressors resistance even not encountered in their life cycle. Resistance is mediated by such things as changing modifications in cell wall permeability, insufficient dose dependent concentrations, alterations in targeted cites, efflux pumps expulsion of the drug outside the cell, decreasing sensory metabolites, production of verified enzymes, including beta lactamases, modified aminoglycoside and chloramphenicol acetyltransferases that inactivate the antibiotics before they can exert their effects. Overwhelming frequency and distribution patterns of mobile genetic components, a transmissible plasmid among microbial populations resident and deposited within biofilm barrier entities and food chains, with transmission phases of contamination and clinical exaggeration battling to become CHIMERAS (Ahmed, Abdulrahman, and Taha 2023; Ali Hassan Ahmed Al-Shammary 2019; As and Priyadha 2019; Elwakil et al. 2023; Hafiz et al. 2023; Hu et al. 2023; Roy, S.; Naha, S.; Rao, A. and Basu 2021; Spellberg and Bonomo 2015; Zaidan, Hornak, and Reynoso 2021).

All recovered PCR confirmed clones of *A. baumannii* were highly resistant in vitro disc diffusion to selected and grouped antibiotics except some phenotypes were partially sensitive to meropenem, norfloxacin and azithromycin with the development of authentication module of residual prohibited persisters inside inhibition zones, and an emergent evolution of dangerous verdicts of extended spectrum beta lactamase resistance (ESβL) phenomenon between and within versatile recovered phenotypes. Encapsulated slime entities were difficult to processing with antibiotics but other side of trueness might be fault in comparison to in vivo coordinated ecosystem therapy (Ahmed, Abdulrahman, and Taha 2023; As and Priyadha 2019; Elwakil et al. 2023; Hafiz et al. 2023; Hu et al. 2023; Roy, S.; Naha, S.; Rao, A. and Basu 2021; Spellberg and Bonomo 2015; Zaidan, Hornak, and Reynoso 2021).

When exposed to cold pasteurization ultraviolet scheduled regimes directly of cultured contaminated plates and indirectly induced contaminated UHT milk with cooling refrigeration episodes, ultraviolet tolerance resistance behaviors were observed in selected MDR XDR* A. baumannii *recovered from dairies and UTI patients. As shown in tables (2–5) and Figure "5," biohazard* A. baumannii *was the most common species found in all examined dairies and was deposited there by human UTI retrieved isolates with violation emergency.

Table 2: Designed labelled codebooks for topic sectors cascaded brands.

Codebook	**Brand**	**Codebook**	**Brand**	**Codebook**	**Brand**
Abu-Ghraib (G)		Al-Fudhaliyah (F)		Al-Sadrya (S)	
GRM nx	Raw Milk	FRMnx	Raw Milk	SRMnx	Raw Milk
GFYnx	Fresh Ropy Yogurt	FFYnx	Fresh Ropy Yogurt	SFYnx	Fresh Ropy Yogurt
GSYnx	Soured Curd Yogurt	FSYnx	Soured Curd Yogurt	SSYnx	Soured Curd Yogurt
GFCnx	Fresh Soft Cheese	FFCnx	Fresh Soft Cheese	SFCnx	Fresh Soft Cheese
GBCnx	Brined Soft Cheese	FBCnx	Brined Soft Cheese	SBCnx	Brined Soft Cheese
GBnx	Butter	FBnx	Butter	SBnx	Butter
GCRnx	Cream	FCRnx	Cream	SCRnx	Cream

Table 3: Ultraviolet irradiation susceptibility index for selected Prohibited MDR A. baumannii recovered from Abu-Ghraib .

Topic MDR	Mean Reduction Log Count CFU.ml^{-1} after Ultraviolet Irradiation					
	Log	DARV0	Log	IDARV1	Log	IDARV2
GRMnx	2	0.33	5*	1.2	5**	1.2
GFCnx	3	0.5	5*	1.2	3	0.5
GBCnx	3	0.5	5*	1.2	5**	1.2
GBnx	3	0.5	5*	1.2	3	0.5
GCRnx	5*	1.2	5**	1.2	5***	1.2

*** Phenotypic Colonial Variants Abnormal Mega Biofilm Defense Producers, DARV0 :Direct Acinetobacter Reduction Value, IDARV1 :Indirect Acinetobacter Reduction Value, IDARV2 = Indirect Acinetobacter Reduction Value.**

Table 4: Ultraviolet irradiation susceptibility index for selected Prohibited MDR A. baumannii recovered from Al-Fudhaliyah .

Topic MDR	Mean Reduction Log Count CFU.ml^{-1} after Ultraviolet Irradiation					
	Log	DARV0	Log	IDARV1	Log	IDARV2
FRMnx	3	0.5	5*	1.2	5**	1.2
FFCnx	2	0.33	5*	1.2	4**	1
FBCnx	5*	1.2	2	0.33	4**	1
FBnx	2	0.33	5*	1.2	3	0.5
FCRnx	2	0.33	5*	1.2	3	0.5

Table 5: Ultraviolet irradiation susceptibility index for selected Prohibited MDR A. baumannii recovered from Al-Sadrya.

Topic MDR	Mean Reduction Log Count CFU.ml^{-1} after Ultraviolet Irradiation					
	Log	DARV0	Log	IDARV1	Log	IDARV2
SRMnx	3	0.5	3	0.5	5*	1.2
SFYnx	0	0	0	0	0	0
SSYnx	0	0	0	0	0	0
SFCnx	0	0	3	0.5	3	0.5
SBCnx	2	0.33	4*	1	5**	1.2
SBnx	5*	1.2	4*	1	2	0.33
SCRnx	1	0.25	4*	1	5**	1.2

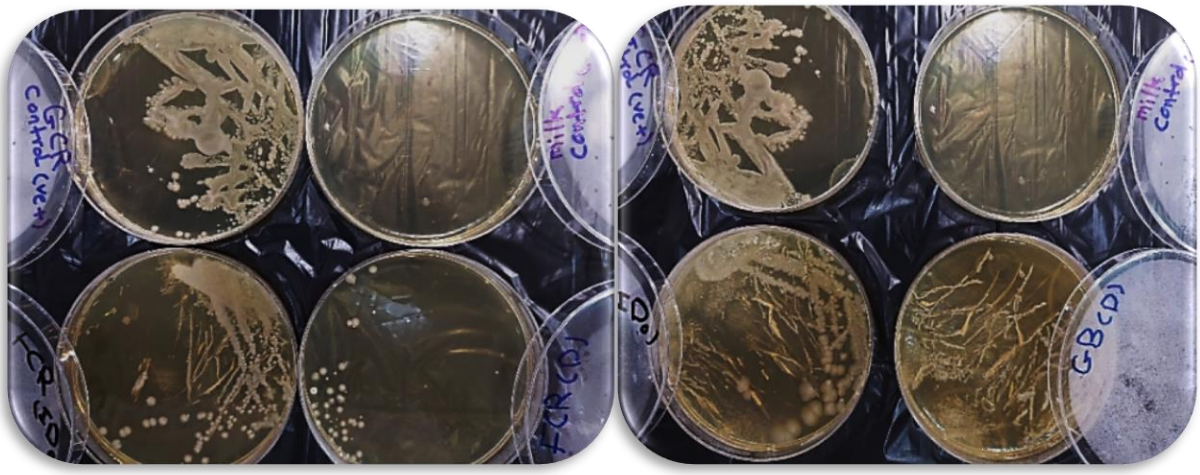

Figure 2: TSAYE recovered Chimeras A. baumannii within biofilm from dairy and UTI cases in Baghdad.

Pathogens, viruses like Corona, fungi, and spores carried by biofilm entities demonstrate various and adaptable stress responses to ultraviolet radiation in food and water chain environments (Khan et al., 2022). UV light emissions could kill microbes directly throughout break down of DNA or indirectly throughout oxidative stress via releasing and activation of free radicles. Genetically evolved biofilm microorganism could modulate UV irradiation struggling damage of DNA via cleaver buffering response throughout production of specific shock proteins such as catalase, superoxide dismutase and endonuclease IV, which repair oxidative damage (Begley and Hill 2015; Hassan, Al-Shammary, and Mounam 2022; Mofidi et al. 2002). Cytotoxic B wavelength of UV light irradiation could either terminates microbes or convert them to a Chimeras like the predominant mother prokaryotic Deinococcus radiodurans catastrophic polyextremophilic creature that transmit evolution of radiation tolerance to other cross sectional foodborne and waterborne bacteria (Palanisamy et al. 2021). Error-prone and error-free DNA damage repair responses that are induced in *A. baumannii* throughout cascaded exposure to diverse and versatile stressors including radiation. Critical SOS response genes were targeted for buffering, counteract and tolerate these catastrophic stressors. A similar homeostasis response of *E. coli* to Ultraviolet radiation and irradiation was present but more developed in *A. baumannii* depending on glycoproteins UmuD and DinP regulators. DNA damage causes the activation of RecA, which facilitates LexA self-cleavage and releases the repression of SOS genes. UmuD and DinP initially cause a pause in cell division while DNA repair and replication occur. Cascaded stimuli within minutes homodimerizes and carry out intermolecular self-cleavage, facilitated by activated RecA interaction. Cleaved regulators then associated to form DNA polymerase V, which carries out error-prone, trans-lesion DNA replication (SOS mutagenesis) (Hare *et al*., 2012; Kurth *et al*., 2015; Tierney *et al*., 2022). Resistance behavior to irradiation could developed from resistance of microbes and their genes to antibiotics and vice versa (Al-shammary and Mounam 2023; Destiani and Templeton 2019; Norton, Spilkia, and Godoy 2013).

Frequency and distribution patterns of these radiation elements within polluted and contaminated environments could activate hidden uncounted sensation stimuli and stress adaptation cascaded by stress hardening via pathogenic microbes to become epigenetic temporary drift tolerance behaviors or switch to genetic permanent mutants shifted resistant Chimeras with overproduction and recreation of the recalcitrant photoprotective barrier of biofilm entities. Harbored buffering and anti-irradiation strategies including biosorption, biotransformation, biomineralization and intracellular accumulation (Delorme, M. M.; Guimarães, J. T.; Coutinho, N. M.; Balthazar, C. F.; Rocha, R. S.; Silva, R.; Margalho, L. P.; Pimentel 2021; Goldman and Travisano 2011; Hassan, Al-Shammary, and Mounam 2022; Mofidi et al. 2002). Genomic diversity and plasticity (remodeling and evolutionary) in epigenetic tolerance or genetic resistance inside *A. baumannii* depend primarily on growth phase

patterns of targeted denominator upon switching from environmental contamination phase in dairies chain ecosystems to clinical phase in patients as UTI or foodborne illness (food poisoning). Residence and deposition of radiation repair mechanisms were extremely different in both lifestyles of the invading species. Generation time of denominator (growth patterns from lag phase proceeds to log followed by exponential or stationary ending with decline primordial curve to death with intermittent early, mid and late growth evolutionary) cascaded by type and source of UV light emission processing could segregate genetic ability and capacity to tolerate irradiation shock according to selective pressure fortunately in some not all evolved prohibited clones. Repeated exposure to ultraviolet natural radiation cascaded by induced irradiation regimes causing memory shifting from exponential resistance to lag tolerance and so on new progeny specially those expressed as persisters inside a biofilm could create abnormal mutant tolerant ancestor Different functional groups were evolved within mutated populations of *A. baumannii* during exposure time and temperature of cold ultraviolet pasteurization regimes in different locational structures of cell members integrity and housekeeping proteins and DNA polymerases. These elicited events in signal transduction, transcriptional and translational shifting phases of phenotyping altered growth patterns of targeted denominator *A. baumannii* causing sophisticated struggling hygienic biohazard problems both in Human and Environmental industries. Therefore, genomic signatures of these evolved, emergent, prohibited, and adapted mutant infectious biohazard foci could not be terminated if there is no activated verified HACCP policy torment (Hare et al. 2012; Hassan, Al-Shammary, and Mounam 2022; Kurth et al. 2015; Tierney et al. 2022).

In conclusions: An emergent biofilm Superbugs within local dairy chain and from Human UTI cases in Baghdad. Prohibited sequels of multidrug resistant and ultraviolet irradiation tolerant foci of *A. baumannii* were resident, deposited and encountered in Baghdad as a new emergent entity.

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AUTHOR'S CONTRIBUTION

These authors each contributed equally.

Conflict of interests

The authors have declared no conflict of interest.

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