



Publications Template

#	Research Title	Field	Abstract	Year of Publication Publishing	Publishing Link "URL"
1	Microbiological study of certain genes associated with biofilm forming capacity of Methicillin resistant Staphylococcus aureus in Egypt: An eye on Nifedipine repurposing	microbiology	<p>ackground: <i>Staphylococcus aureus</i> remains one of the most prevalent pathogens associated with several infections. We aim to evaluate the biofilm forming capacity along with the presence of biofilm-associated genes in MRSA from surgical wound infections. In addition, potential antimicrobial activity of nifedipine was investigated. Methods: A total of 50 MRSA isolates were collected form surgical wound samples from clinical laboratories. The antimicrobial susceptibility and</p>	2021	https://mid.journals.ekb.eg/article_202424.html



biofilm forming capacity were screened. PCR was used to detect *icaA*, *icaD*, *hla*, *sirB*, *ebpS*, *fnbA*, *clfA*, *sdr* and *can* genes. The antimicrobial and antibiofilm effect of nifedipine, alone and combined with levofloxacin, was determined. Preliminary molecular docking was employed to predict the binding affinity between nifedipine and different target proteins. Spa typing was performed to analyze MRSA strains. **Results:** All MRSA strains were multidrug-resistant and biofilm producers. The most abundant gene was *hla* (96%), followed by *icaA* and *sirB* with equal prevalence (88%). Biofilm formation was



significantly associated with *icaA*, *icaD*, *sdrE* and *sirB* genes. In addition to the antibiofilm activity of nifedipine, there was a synergistic effect between it and levofloxacin, this finding was further given strength to by molecular docking where nifedipine had a binding affinity to HTH-type transcriptional regulator qacR. For the first time in Egypt, spa type t314 was reported.

Conclusion:
Nifedipine, alone and combined with levofloxacin, showed promising results as antimicrobial and antibiofilm agent. Such effect might be due to efflux inhibition activity and worth additional investigation

			to understand the underlying mechanism.		
2	Effect of subinhibitory concentrations of selected antibiotics and propolis on pyocyanin and biofilm production among <i>Pseudomonas aeruginosa</i> isolates in Alexandria, Egypt	Microbiology	<p>Background: <i>Pseudomonas aeruginosa</i> is a highly virulent microorganism that is implicated in various types of infections. It is armed with an arena of virulence factors that is mostly controlled by quorum sensing. The pigment pyocyanin and biofilm formation are of the important defense mechanisms used by the organism to establish infection.</p> <p>Objective: detection and quantification of biofilm mass and pyocyanin along with effect of subinhibitory concentrations of antibiotics on their magnitude.</p> <p>Methodology: In the present study, fifty <i>Pseudomonas</i></p>	2021	https://ejmm.journals.ekb.eg/article_198932.html



aeruginosa isolates were obtained from clinical laboratories from all over Alexandria governorate, Egypt. The isolates were tested for certain quorum sensing dependent virulence factors and the effect of subinhibitory concentrations of certain antibiotics, in addition propolis extract, was assayed. Results: the sub MIC of selected antibiotics and propolis inhibited pyocyanin production. On the other hand, they had variable effects on the formed biofilm mass. Conclusion: the effect of sub inhibitory concentrations either on biofilm formation or pyocyanin production is very important to be tested and followed to

			<i>predict bacterial behavior and assist in tailoring therapeutic regimen.</i>		
3	Assay of antimicrobial and antibiofilm activity of selected anti-inflammatory agents and their impact on levofloxacin activity	Microbiology		2020	https://www.researchgate.net/publication/342626380 Assay_of_antimicrobial_and_antibiofilm_activity_of_selected_anti-inflammatory_agents_and_and_their_impact_on_levofloxacin_activity
4	PHENOTYPIC AND GENOTYPIC EVALUATION OF GATIFLONACIN RESISTANCE IN STAPHYLOCOCCUS AUREUS AND PSEUDOMONAS AERUGINOSA CLINICAL ISOLATES IN EGYPT	Microbiology	Pseudomonas aeruginosa and Staphylococcus aureus continue to be predominant causes of infection with high resistance to antibiotics. Gatifloxacin (GAT) is a broad-spectrum fluoroquinolone, active against Gram-positive and Gram-negative bacteria This study aimed to determine the prevalence of GAT resistance among tested isolates and to study the phenotypic and genetic	2015	



elements related to drug resistance with attempts to reduce it. One hundred and eight clinical isolates were identified biochemically and their antibiotic susceptibility pattern was determined. Mutations in the quinolone resistance determining region (QRDR) genes were investigated as well as the possible involvement of efflux pumps in mediating fluoroquinolones resistance. Moreover, the post-antibiotic effect (PAE) and combinations with other compounds were tested to reduce the resistance and dosing regimens of GAT. Resistance to GAT against *P. aeruginosa* and *S. aureus* isolates were found to be 59.2%



and 42.5 %, respectively. The PAE of the *P. aeruginosa* isolates reached 2 h while that for *S. aureus* isolates was 1.6 hr. GAT showed synergistic effect when combined with ciprofloxacin and cefoperazone and obvious synergy when combined with benzalkonium chloride. Upon sequencing the QRDR of *gyrA*, *grlA*, and *parC* genes some point and silent mutations were detected. GAT has bactericidal activity against *S. aureus* and *P. aeruginosa*. Mutations could be rapidly and reliably detected by DNA sequencing. Resistance to GAT in several bacterial species is due to point mutations in the QRDR



			of the target enzymes rather than other resistance mechanisms. Synergism of GAT with ciprofloxacin and cefoperazone was observed against some strains that were non-susceptible to either antibiotic alone.		
5	Association of some virulence genes in Methicillin resistant and Methicillin sensitive Staphylococcus aureus infections isolated in community with special emphasis on pvl/mecA genes profiles in Alexandria, Egypt	Microbiology	Introduction The uncontrolled use of disinfectants and antiseptics during the COVID-19 pandemic in 2020, in Egypt, poses the risk of dissemination of virulence and antibiotic resistance among community acquired Staphylococcus aureus Aim The goal of this study, was to shed a light on the virulence profile of both MSSA and MRSA isolated in community. In addition, the present study aimed at	2021	https://www.sciencedirect.com/science/article/abs/pii/S2452014421003198



evaluating the correlation between level of prevalence of certain virulence genes in Staphylococcus aureus (MSSA and MRSA) that are acquired in community settings and mecA /pvl profile. Methodology A total of 75 Staphylococcus aureus isolates were obtained from different private laboratories, all over Alexandria, Egypt, in 2020. The isolates were identified phenotypically, tested for their antibiotic resistance profile with special emphasis on Methicillin resistance. The presence of seven virulence genes namely: mecA, mecC, Panton-Valentine leucocidin (pvl), Serine-aspartate repeat-containing protein E



(sdrE), enterotoxigenic gene (sea), Exfoliative toxin (eta), toxic shock syndrome (tsst), using polymerase chain reaction, was tested. Prevalence of antigenic genes were correlated to four profiles of mecA, pvl existence. Results It was shown that: both mecC and eta genes were absent in all tested isolates, 18 of 75 (24%) carried the five genes and only three isolates lacked all the tested genes. The study revealed high level of antibiotic resistance among the tested isolates, where the prevalence of methicillin resistance accounted for up to 76%. Different levels of association were detected between the different antigenic traits specially when isolates



were divided into four profiles revealing a correlation between the absence of pvl and that of sea genes in addition to a correlation with gender, wound infections and sea genes Conclusion As far as we are concerned, correlation to both mecA and pvl profiles was not previously attempted. Slightly higher prevalence of pvl genes in MSSA isolates than MRSA isolates, correlated to an extent to the presence or absence of other antigenic traits revealing the entangled nature of genetic components shown to be affected by gender, wound infection and sea genes existence, such finding opens a door for the prediction



			of infectious agents' profiles along with targeted treatment options. : The absence of mecC, suggests low or still no prevalence in Staphylococcus aureus isolated in community in Alexandria, as geographical region normally impacts gene distribution.		
6	Valsartan solid lipid nanoparticles integrated hydrogel: A challenging repurposed use in the treatment of diabetic foot ulcer, in-vitro/in-vivo experimental study	multidisciplinary	The article presents an experimental study on the possible repurposed use of valsartan (Val), in the local treatment of uncontrolled diabetic foot ulcer. Solid lipid nanoparticles (SLN), loaded with Val were prepared by applying 3 ² full factorial design using modified high shear homogenization method. The lipid phase composed of Precirol® ATO 5 (P ATO 5) and/or Gelucire	2020	https://pubmed.ncbi.nlm.nih.gov/33197564/



50/13 (G 50/13) in different ratios and a nonionic emulsifier, Pluronic 188 (P188), was used in different percentages. Optimized formulation was further integrated in hydroxyl propyl methyl cellulose (HPMC) gel for the ease of administration. In-vitro and in-vivo characterizations were investigated. The prepared nanoparticles showed small particle size, high entrapment efficiency and sustained drug release. Microbiologically, Val-SLN showed a prominent decrease in the biofilm mass formation for both gram-positive and gram-negative bacteria, as well as a comparable minimum inhibitory concentration level to levofloxacin alone.



Diabetes was induced in 32 neonatal Sprague-Dawley rats. At 8 weeks of age, rats with blood sugar level >160 were subjected to surgically induced ulcer. Treatment with Val-SLN for 12 days revealed enhanced healing characteristics through cyclooxygenase-2 (COX-2), nuclear factor kappa-light-chain-enhancer of activated B cells (NF- κ B), nitric oxide (NO), transforming growth factor-beta (TGF- β), matrix metalloproteinase (MMPs) and vascular endothelial growth factor (VEGF) pathways. Histological examination revealed re-epithelization in Val-SLN treated ulcer, as well as decrease in



			collagen using trichrome histomorphometric analysis.		
8	DETECTION OF BIOFILMS AND THEIR INTERACTIONS IN WOUND INFECTION: ROLE OF N-ACYL HOMOSERINE LACTONE AND OTHER VIRULENCE FACTORS IN ENHANCEMENT OF BIOFILM FORMATION	microbiology	The deleterious effect of microbial infection on wound healing has been recognized for decades and control of bioburden is considered as an important aspect of wound management. Biofilms play a role in the prevention of wound healing. Biofilm-related diseases are typically persistent infections.	2011	
9	Dexpanthenol and propolis extract in combination with local antibiotics for treatment of Staphylococcal and Pseudomonal wound infections	microbiology	Background: Managing bacteria and their biofilms in wounds is vital in achieving wound healing. Determination of antimicrobial and antibiofilm activity of different remedies such as dexpanthenol and propolis-natural bee	2011	https://www.acmicrob.com/microbiology/dexpanthenol-and-propolis-extract-in-combination-with-local-antibiotics-for-treatment-of-staphylococcal-and-pseudomonal-wound-infections.pdf



		product-alone and/or in combination with topical antimicrobial agents on Pseudomonas and Staphylococcus wound infection was the aim of this study.		
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