Publications Template

#	Research Title	Field	Abstract	Year of Publication Publishing	Publishing Link "URL"
1	A Nanoparticles based Microbiological Study on the Effect of Rosemary and Ginger Essential Oils against *Klebsiella pneumoniae*.	Microbiology	**Background:** *Klebsiella pneumoniae* is a nosocomial pathogen in outbreaks of hospital infections. It is one of the major factors for morbidity and mortality in hospitalized patients especially those infected with colistin-resistant pathogens. Many plant essential oils have antimicrobial activities and have been investigated as natural sources to combat multiple antibiotic resistances. Moreover, recent advances in phytonanotechnology have created exciting opportunities for the management of many infections. **Objective:** This study aims at investigating the antimicrobial and antibiofilm effect of rosemary and ginger essential oil-based nano-sized formulations on colistin resistant *K. pneumonia* clinical isolates. **Methods:** Isolation and identification of 30 *K. pneumonia* isolates from different human samples were done followed by antibiotic susceptibility testing and detection of biofilm gene (*mrkD*). Examination of the activity of the tested essential oils and their chitosan nanoparticle formulations against the selected isolates was made by determination of their MICs using broth microdilution method followed by biofilm inhibition test and quantitative real-time PCR for the expression of *mrkD* gene in the presence of the oils and nanoparticles formulations compared to untreated bacterial isolates.	**2020**	https://benthamopen.com/ABSTRACT/TOMICROJ-14-205

			Results: Our results showed that the minimum inhibitory concentration of rosemary and ginger oils was 1250 µg/ml, that of nanostructured lipid carrier-rosemary oil and nanostructured lipid carrier-ginger oil was 625 µg/ml and rosemary oil loaded chitosan nanoparticles and ginger oil loaded chitosan nanoparticles possessed minimum inhibitory concentration of 156 µg/ml. Results also revealed complete (100%) inhibition for *mrkD* gene expression when compared to untreated *K. pneumonia*. **Conclusion:** Oil loaded chitosan nanoparticles showed the highest antimicrobial and antibiofilm activity.		
2	Synthesis and molecular docking study of some 3, 4-dihydrothieno [2, 3-d] pyrimidine derivatives as potential antimicrobial agents	Microbiology	In continuation of our research program aiming at developing new potent antimicrobial agents, new series of substituted 3,4-dihydrothieno[2,3-d]pyrimidines was synthesized. The newly synthesized compounds were preliminary tested for their in vitro activity against six bacterial and three fungal strains using the agar diffusion technique. The results revealed that compounds 7, 8a, 10b, 10d and 11b exhibited half the potency of levofloxacine against the Gram-negative bacterium, *Pseudomonas aeruginosa*, while compounds 5a, 8b, 10c and 12 displayed half the potency of levofloxacine against *Proteus Vulgaris*. Whereas, compounds 7, 10b, 10d and 11b showed half the activity of ampicillin against the Gram-positive bacterium, *B. subtilis*. Most of the compounds showed high antifungal potency. Compounds 3, 6, 7, 9b, 10a, 11a, 11b, 15 and 16 exhibited double the potency of clotrimazole against *A. fumigatus*. While compounds 3, 4, 5a, 5b, 9b, 10a, 10b, 10c, 13, 15, 16 and 18 displayed double the activity of clotrimazole against *R. oryazae*. Molecular docking studies of the active compounds with the active site of the	**2019**	https://www.sciencedirect.com/science/article/abs/pii/S0045206819300276

			B. anthracis DHPS, showed good scoring for various interactions with the active site of the enzyme compared to the co-crystallized ligand.		
3	Synthesis, antibacterial evaluation, and DNA gyrase inhibition profile of some new quinoline hybrids	Microbiology	Antibiotic-resistant bacteria continue to play an important role in human health and disease. Inventive strategies are necessary to develop new therapeutic leads to challenge drug-resistance problems. From this perception, new quinoline hybrids bearing bioactive pharmacophores were synthesized. The newly synthesized compounds were evaluated for their in vitro antibacterial activity against nine bacterial pathogenic strains. The results revealed that most compounds exhibited good antibacterial activities. Seven compounds (**2b**, **3b**, **4**, **6**, **8b**, and **9c,d**) displayed enhanced activity against methicillin-resistant *Staphylococcus aureus* compared to ampicillin. These compounds were subjected to an in vitro *S. aureus* DNA gyrase ATPase inhibition study, which revealed that compounds **8b**, **9c**, and **9d** showed the highest inhibitory activity with IC_{50} values of 1.89, 2.73, and 2.14 μM, respectively, comparable to novobiocin (IC_{50}, 1.636 μM). Compounds **2a–c**, **3a**, **7c**, **9c,d**, and **10a,b** revealed half the potency of levofloxacin in inhibiting the growth of *Pseudomonas aeruginosa*. As an attempt to rationalize the observed antibacterial activity for the most active compounds **8b**, **9c**, and **9d**, molecular docking in the ATP binding site of *S. aureus* gyrase B was performed using Glide. Such compounds could be considered as promising scaffolds for the development of new potent antibacterial agents.	**2019**	https://onlinelibrary.wiley.com/doi/abs/10.1002/ardp.201900086
4	Design, synthesis, antibacterial evaluation and molecular docking studies of some new quinoxaline derivatives targeting	Microbiology	Development of new antimicrobial agents is a good solution to overcome drug-resistance problems. From this perspective, new quinoxaline derivatives bearing various bioactive heterocyclic moieties (thiadiazoles, oxadiazoles, pyrazoles and thiazoles) were designed and synthesized. The newly synthesized compounds were	**2018**	https://www.sciencedirect.com/science/article/abs/pii/S0045206817307423

	dihyropteroate synthase enzyme		evaluated for their *in vitro* antibacterial activity against nine bacterial human pathogenic strains using the disc diffusion assay. In general, most of the synthesized compounds exhibited good antibacterial activities. The thiazolyl 11c displayed significant antibacterial activities against *P. aeruginosa* (MIC, 12.5 µg/mL vs levofloxacin 12.5 µg/mL). Molecular docking studies indicated that the synthesized compounds could occupy both *p*-amino benzoic acid (PABA) and pterin binding pockets of the dihydropteroate synthase (DHPS), suggesting that the target compounds could act by the inhibition of bacterial DHPS enzyme. The results provide important information for the future design of more potent antibacterial agents.		
5	Synthesis of pyrazolo-1,2,4-triazolo[4,3-a]quinoxalines as antimicrobial agents with potential inhibition of DHPS enzyme	Microbiology	**Aim:** The development of a new class of antimicrobial agents is the optimal lifeline to scrap the escalating jeopardy of drug resistance. **Experimental:** This study aims to design and synthesize a series of pyrazolo-1,2,4-triazolo[4,3-*a*]quinoxalines, to develop agents having antimicrobial activity through potential inhibition of dihyropteroate synthase enzyme. The target compounds have been evaluated for their *in-vitro* antimicrobial activity. **Results & discussion:** Compounds **5b, 5c** were equipotent (minimal inhibitory concentration = 12.5 µg/ml) to ampicillin. The docking patterns of **5b** and **5c** demonstrated that both fit into *Bacillus Anthracis* dihydropteroate synthase pterin and *p*-amino benzoic acid-binding pockets. Moreover, their physicochemical properties and pharmacokinetic profiles recommend that they can be considered drug-like candidates. The results highlight some significant information for the future design of lead compounds as antimicrobial agents.	**2018**	https://www.future-science.com/doi/full/10.4155/fmc-2018-0082

6	Efficacy of the Clove Oil, Cinnamon Oil, Thyme Oil and Origanum Oil against Multidrug Resistant *Pseudomonas aeruginosa* and *Burkholderia cepacia Complex*	Microbiology	The increased frequency in clinically observed cases of antibiotic resistance has been attributed to many factors such as the misuse and overuse of antibiotics since in some countries, antibiotics are sold over the counter without a prescription, the large quantities of antibiotic waste produced from livestock rearing, overconfidence in human control over infectious diseases and the continued decline in the number of newly approved antibiotics. Few studies have focused on the investigation of antimicrobial activities of medicinal plants against clinically isolated antibiotic resistant pathogens. Hence the aim of this work is to investigate the antimicrobial effect of clove, cinnamon, thyme and origanum on clinically isolated multidrug resistant strains of *Pseudomonas aeruginosa* and *Burkholderia cepacia complex*.	**2017**	https://www.ijcmas.com/abstractview.php?ID=1270&vol=6-1-2017&SNo=4