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Details of the Collaborative Activity

2020-21

Name of the Collaborating Institute: Mangalore University, Mangalagangothri

Name of Collaborating Departments: Dept. of MSW, Yenepoya Medical College and Yenepoya Research Center

Activities: Student Exchange Programme

Field work Training of MSW Students

- Ms. Deepa Chowdary
- Ms. Nisha M. Suvarna

Joint Research and Publications

1. Kouser S et al. *Journal of the Mechanical Behavior of Biomedical Materials*, 2021; 118: 104441.
2. D' Souza JN et al., *Applied Surface Science*.2021; 552: 149429.
3. D'Souza JN, et al., *Materials Science and Engineering: C*.2021; 122: 111887.
4. Sunil KC et al., *Ceramics International*. 2021; 47:
5. Kouser S et al. *International Journal of Biological Macromolecules*.2020; 165: 1079 - 92.
6. Kuthyala S et al., *ChemistrySelect*, 2020; 5: 10827-10834.
7. Uwabagira N et al., *Anti-Cancer Agents in Medicinal Chemistry*.2020; 20: 1704-1713.
8. Jayappa MD et al, *Applied Nanoscience*. 2020; 10: 3057-3074.
9. Bhagya N, et al. *Synergy*.2020; 10: 100063.

- **Utilization of Facilities:**
  Both the institutes share different research facilities for research studies.

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Effects of reinforcement of sodium alginate functionalized halloysite clay nanotubes on thermo-mechanical properties and biocompatibility of poly (vinyl alcohol) nanocomposites

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ABSTRACT

In the present work sodium alginate functionalized halloysite nanotubes (HNTs) reinforced poly (vinyl alcohol) nanocomposite films were prepared by solution casting technique. Sodium alginate surface functionalizing on the HNTs through hydrogen bonding was confirmed by spectroscopic and morphological analysis. The functionalized HNTs were successfully incorporated into the PVA matrix. Further, the films were characterized by using FTIR, TGA, XRD, SEM, AFM, UTM, WCA and swelling ratio analysis. The obtained results indicated improved physico-thermal properties, and uniform distribution of nanotubes in the matrix and roughness of the surface compared with the pristine PVA films. After inclusion of functionalized nanotubes causes enhancement of tensile strength as well as young's modulus of the nanocomposite films. Water contact angle measurement was carried out to know the hydrophilic or hydrophobic nature of the films and results were correlated with swelling ratio analysis. Furthermore, the films were analyzed for *in-vitro* biocompatibility studies. *In -vitro* enzymatic degradation was carried out in PBS media and cellular behaviour studies were analyzed using NIH3T3 cell lines. The results showed enhancement in the enzymatic degradation, proliferation, adhesion activity compared to that of pristine PVA films. In extension, nanocomposite films were subjected to hemocompatibility studies using human erythrocyte. The results revealed that nanocomposite films were biocompatible and hemocompatible. The fabricated films can be used in biomedical application.

1. Introduction

In recent decades the mechanisms for the regeneration of distorted tissues and organs have been extensively studied through bio fabrication techniques (Zhu et al., 2002). Biomaterials are an ideal material for promoting cell growth and attachment (Guarnieri et al., 2010). Through modification of the biomaterials, dynamic biomaterial properties can be tuned to modulate different cell functions in the specific biomedical field, such as extracellular membrane (ECM) and a cellular environment (Wallin et al., 2012). Biomaterials either synthetic or natural are used for medical applications (Rothenfluh et al., 2008). Natural or synthetic biopolymers through functionalization play a significant role in biomedical devices because of their specific properties towards the cell growth (Costa et al., 2004). Natural biopolymers such as chitosan, sodium alginate, cellulose, silk, etc. by blending with synthetic biopolymers i.e., bio mimicking, can be efficiently targeted for biological studies towards tailored applications (Kohane and Langer, 2008). Recent research trends on the fabrication and modification of nanocomposite materials has shown a growing interest among researchers (Gunatillake et al., 2003). Because of their eco-friendly, renewable and efficient properties, nanocomposites could be developed into promising materials for potential applications in the biomedical field (Ferrari et al., 2017). The addition of nanofiller in the polymer matrix has been frequently used for nanocomposite synthesis with improved mechanical

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Full Length Article

Sauropus androgynus (*L.*) leaf phytochemical activated biocompatible zinc oxide nanoparticles: An antineoplastic agent against human triple negative breast cancer and a potent nanocatalyst for dye degradation

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ARTICLE INFO

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ZnOSA NPs
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Photocatalyst

ABSTRACT

The present study delineates the biosynthesis of ZnOSA NPs by availing *S. androgynous (L.)* aqueous leaf extract. The formation of ZnOSA NPs was substantiated by FT-IR and UV–visible spectroscopy which was further corroborated by the elemental composition study through EDS spectroscopy. The FE-SEM and HRTEM micrographs have revealed the formation of NPs with different shapes and sizes ranging from 12 to 23 nm. The BET isotherms obtained have manifested the mesoporous nature of ZnOSA NPs. The *in-vitro* cytotoxicity studies of ZnOSA NPs carried out on MDAMB468 human triple-negative breast cancer (TNBC) and NIH3T3 mouse fibroblast cells have evinced their potential cytotoxic effect (75.98 ± 1.07) on cancer cells sparing the normal cells. Further, the results of the AO-EB dual staining assay indicated early apoptosis in TNBC cells by displaying greenish yellow-fluorescence in the nuclei at a IC_{50} concentration of 53.79 μg/mL of NPs. Additionally; the human erythrocyte membrane stabilization assay has corroborated the haemocompatibility of ZnOSA NPs by exhibiting a % HRBCMS up to 89.15 ± 0.02%. Furthermore, the photocatalytic experiments performed on Methylene Blue dye have revealed the excellent degradation efficiencies of ZnOSA NPs up to 88.01% with high stability and reusability tested during 4 catalytic cycles. Thus, the obtained results have shown greater potential in the anticancer and photocatalytic dye degradation activities of bio-fabricated ZnOSA NPs.

1. Introduction

Nanomaterials have been known for hailing tremendous contributions in the big world of nanotechnology. The principles of nanotechnology involved in the design and systematic synthesis of nanomaterials lead to the formation of various nanostructured, core components of nanotechnology viz. nanoparticles (NPs), nanowires, nanorods, nanospheres, nanoclustures, nanoplates, nanofilms, nanodots, and nanotubes [1]. The specialty of these nanomaterials lies in their large surface to volume ratio, quantum effect, and surface defects compared to their bulk counterparts [2]. Among the various nanomaterials, the metal oxide (MO) NPs are emerging as the materials of great interest to the research community; due to their wide range applications in biomedical science, environmental science, electronics, catalysis, and many other fields [3]. Considering the expansive applications of MO NPs, researchers have developed many physical and chemical methods for their synthesis [4–6]. On the other hand, the 'green syntheses' approaches used to fabricate the MO NPs by utilizing the different 'green sources' viz. plants and microorganisms are much trending. The benefit of the green approach over the other traditional approaches is that the phytochemicals present in the extract of these green sources function as both reducing and capping agents, making the obtained MO NPs more suitable for biomedical and environmental applications [7].

Among various NPs, ZnO NPs have been significantly attracting the researchers owing to their distinctive optical and chemical behavior, which could be easily tuned by changing their size and shapes. In addition to this, the ZnO NPs are also known for their photo-catalytic and photo-oxidizing properties of chemical and biological species [8]. These unique catalytic and oxidizing capabilities make the ZnO NPs as the most suitable candidates for their use in the fields of medicine and

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Unravelling the human triple negative breast cancer suppressive activity of biocompatible zinc oxide nanostructures influenced by *Vateria indica* (L.) fruit phytochemicals

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ZnOVI nanostructures
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ABSTRACT

The present study delineates the biosynthesis of ZnOVI nanostructures by using aqueous fruit extract of *V. indica*. The study has disclosed the role of *V. indica* fruit extract as both reducing and capping agents, ushering the formation of ZnOVI nanostructures with distinct morphologies. The formation of ZnOVI nanostructures was corroborated by FT-IR and UV–visible spectroscopy which was further substantiated by the elemental composition study through EDS spectroscopy. The nanostructures were also investigated by Rietveld refinement of PXRD data, FE-SEM, and BET analysis. The morphology, size, and surface area were found to be precursor stoichiometry dependent. The in-vitro cytotoxicity study of ZnOVI nanostructures carried out on MDA-MB468 human triple-negative breast cancer (TNBC) cells has revealed their potential cytotoxicity (91.18 ± 1.98). MTT assay performed on the NIH3T3 mouse fibroblast cells has unfolded the non-toxic nature of ZnOVI nanostructures. Additionally, the results of the AO-EB dual staining assay indicated early apoptosis in TNBC cells by displaying greenish yellow-fluorescence in the nuclei. Reactive oxygen species (ROS) measurement study has confirmed the elevated intracellular levels of ROS, supporting the oxidative-stress induced cytotoxicity in ZnOVI nanostructures treated TNBC cells. Furthermore, the haemocompatibility of ZnOVI nanostructures was evaluated using human erythrocytes. Thus, the obtained results have shown greater potential in the anticancer activity of bio-fabricated ZnOVI nanostructures.

1. Introduction

Cancer is the second leading causatives of mortality worldwide [1]. According to the annual review of cancer biology, as of 2019, about 18 million new cases of cancer have been recorded annually causing the death of about 8.8 million with a death rate of 15.7% [2,3]. Breast cancer is the second most leading cause of cancer death among women. Breast cancer has been classified into hormone-independent and hormone-dependent types and further, hormone-dependent breast cancer is classified into hormone receptor-positive, hormone receptor-negative, and triple-negative [4]. Human triple-negative breast cancer (TNBC) with greater metastatic potential remains the most challenging subtypes of breast cancer with a negative expression of estrogen, progesterone, and human epidermal growth factor receptor-2 (HER2) [5]. Although the principal modes of therapy like surgery, chemotherapy, and radiotherapy promise to cure 60% of loco-regionally advanced and 95% of early-stage cancer, adoption of recent technologies in cancer treatment should be guided by scientific evidence that is cost-effective and of many benefits to the cancer patients with no adverse side effects in comparison to currently used therapies [1].

In this regard, nanotechnology which uses the principles of green chemistry is a boon for the effective treatment of various types of tumors with no or minimum negative effects on the healthy cells. Nanotechnology involves the systematic design and synthesis of various nanomaterials including the metal oxide nanoparticles (MO NPs). The careful surface functionalization of the MO NPs achieved through various green sources viz. plants, fungi, algae, bacteria, etc. produces excellent candidates with the potential to treat cancer [6,7]. The additional benefit of

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Functionalization of halloysite nanotube with chitosan reinforced poly (vinyl alcohol) nanocomposites for potential biomedical applications

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Hemocompatibility

ABSTRACT

The present study reports the preparation of novel surface functionalized halloysite nanotubes (HNTs) with chitosan incorporated Poly (vinyl alcohol) (PVA) nanocomposite films with desirable properties. Surface functionalization of HNTs with Chitosan through hydrogen bonding via acylation with succinic anhydride; supramolecular interaction was confirmed by spectroscopic and morphological analysis. The functionalized HNTs incorporated in the PVA matrix were subjected to FTIR studies, Atomic Force Microscopy, Scanning Electron Microscopy, X-ray diffraction, thermal, mechanical properties, Water Contact Angle, swelling ratio analysis and in-vitro biocompatibility studies. Results of the morphological studies showed that functionalized HNTs were uniformly dispersed and showed improved surface roughness with increasing weight percent of functionalized HNTs in the films. The studies revealed significant enhancement in the mechanical and thermal properties compared with the pristine PVA film. The hydrophilic or hydrophobic nature of films were analysed with WCA and results were compared with swelling studies. Furthermore, in vitro enzymatic degradation and cellular behaviour studies performed on mouse fibroblast (NIH3T3) cells and results confirmed enhanced proliferative and adhesion activity of nanocomposite films compared to that of pristine PVA films. In addition, hemocompatibility studies carried out using human erythrocytes revealed the biocompatible and hemocompatible of nanocomposite films indicating their greater potential for tissue engineering.

1. Introduction

Over the forecast decades biocompatible materials play a significant role in the field of biomedical application. The surface modified biomaterials on interaction with the eukaryotic cells enhance the blood compatibility, cell adhesion and cell proliferation [1,2]. For tissue regeneration, the natural and synthetic polymers have been extensively investigated. However, biomaterials derived from natural sources have greater advantages due to their inherent properties which include biological response to cell growth and biodegradation [3,4]. Since the biomaterials are extensively used for tissue engineering applications, it is necessary to study cell proliferative ability, cell adhesion, cytocompatibility properties etc. [5]. Biopolymers and their blends are most prominent materials to be used in the fabrication of tissue engineering composites. By blending and forming porous structures, films with preferred architectonics can be engineered and their mechanical properties can be modulated [6]. Biopolymers (chitosan, alginate, silk, collagen, etc.) are generally used for the fabrication of tissue engineering scaffolds [7]. Recently, researchers have studied the fabrication of the biomaterials made up of natural and synthetic polymer using nanofiller as dopant (i.e., the particles having at least one dimension less than 100 nm) to improve the properties of manufactured products [8]. Polymer matrix filled with a range of nanomaterials such as nanospheres, nanotubes, nanoplatelets, etc. are becoming a right platform for tissue regenerative applications [9]. It is also being reported that, modification of biopolymer blend with nanoclay materials increases the mechanical strength of scaffolds and also improves the cell adhesion [10].

Chitosan and Halloysite nanotubes (HNTs) are natural biomaterials widely used in tissue engineering and biomedical field. Chitosan is composed of β-(1, 4)-linked D-glucosamine (deacetylated unit) and *N*-acetyl-D-glucosamine (acetylated unit) and it is a linear cationic polysaccharide [11,12]. It is derived from chitin and it dissolves completely in dilute acid (pH < 6). However, the high charge density in dilute acid, allows forming ionic interactions between the films, scaffolds, fibres,

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Poly (caprolactone)/sodium-alginate-functionalized halloysite clay nanotube nanocomposites: Potent biocompatible materials for wound healing applications

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Wound healing

ABSTRACT

In this study, halloysite nanotubes (HNTs) were subjected to surface functionalization using sodium alginate and incorporated into poly(caprolactone) (PCL) to fabricate nanocomposites for potential wound healing applications. The nanocomposite films were fabricated through the solution casting technique and characterized using various instrumental methods. The films exhibited enhanced thermal and mechanical properties. FE-SEM and AFM analyses confirmed the uniform dispersion of the HNTs and increased roughness of the films, respectively. The swelling properties, *in-vitro* enzymatic degradation, and anti-inflammatory activity of the films were also analyzed. The MTT assay performed using NIH3T3 cell lines revealed enhanced cell proliferation (126 ± 1.38) of 5 wt% film. Besides, the cell adhesion tests of the films revealed their cytocompatibility. The scratch assay tests conducted for observing the effectiveness of the films for wound closure showed that the 5 wt% film offered a higher rate of fibroblast cell migration (32.24 ± 0.49) than the pristine PCL film. The HRBCMS assay demonstrated the hemocompatibility of these films. The biological test results indicated the delayed enzymatic degradability and haemocompatiblity of nanocomposites with enhanced cell adhesion, cell proliferation, and cell migration capabilities with respect to fibroblast cells. In summary, the synthesized nanocomposite films can be effectively used in wound healing applications after further clinical trials.

1. Introduction

Biomaterials are being extensively used in wound healing applications globally (Montero et al., 2020). The wound healing process consists of automatic responses generated by the body to the restoration of damaged skin. Wounds include those resulting from accidents, clinical injuries, and diabetic wounds, requiring immediate attention (Moeini et al., 2020). Wound healing is a sequential and complicated process comprising coordinated efforts from various cells in conjugation with chemical and macromolecular mediators to restore damaged skin (Devalliere et al., 2017). The following mutualistic stages are involved in the healing procedure: blood clotting, inflammation, wound contraction, cell proliferation, cell adhesion, cell migration, and fibrous connective tissue regeneration (Sellappan et al., 2020; Turner et al., 2020). Clinically, wounds are categorized into acute and chronic types. Acute wounds are caused by temperature extremes, traumas, contact with chemicals, and irradiation, generally requiring several weeks to heal (Wang et al., 2020). Chronic wounds are typically caused by physical means or infections that include diabetes and pressure ulcers, requiring a longer period to heal owing to prolonged inflammation (Wang & Qi, 2020).

Natural biopolymers and their nanocomposites are emerging as promising candidates in wound healing applications (Mogoşanu & Grumezescu, 2014). Polymers derived from natural sources such as chitosan, collagen, cellulose, and sodium alginate are extensively used in tissue engineering applications because of their beneficial properties

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Piperine sensitizes radiation-resistant cancer cells towards radiation and promotes intrinsic pathway of apoptosis

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Abstract: Piperine, a bioactive alkaloid, is known to have anticancer activities. Hence, in this study, the effectiveness of piperine pretreatment as a strategy for radio-sensitizing colorectal adenocarcinoma cell line (HT-29) was analyzed. For this, HT-29 cells were pretreated with piperine (12.5 and 25 μg/mL) and exposed to γ-radiation (1.25 Gy) and analyzed for various effector pathways to elucidate the possible mode of action in comparison to individual treatments. The proliferation efficiency of the cells was analyzed by trypan blue dye exclusion assay and MTT assay. The synergistic effects of the combination treatment were analyzed with compuSyn software. Downstream signaling pathways leading to apoptosis were studied using flowcytometry, immunofluorescence, and immunoblot assays. It was observed that combination treatment arrested HT-29 cells at G2/M phase nearly 2.8 folds higher than radiation treatment alone, inducing the radio-resistant cells to undergo apoptosis through mitochondria-dependent pathway. In addition, activation of caspase-3 and cleavage of poly(ADP-ribose) polymerases-1, the key molecular events in apoptotic signaling, were significantly enhanced. Activation of estrogen receptor beta (ERβ), a nuclear hormone transcription factor promoting tumor suppression represents a novel clinical advance towards management and prevention of cancers. Interestingly, the expression of ERβ was increased in the cells treated with piperine. In conclusion, piperine pretreatment enhances radio-sensitization in HT-29 cells by inducing the cells to undergo apoptosis hence, can be used as a classic candidate for colon cancer sensitization towards radiotherapy.

Keywords: apoptosis, colon cancer, estrogen receptor, mitochondrial membrane potential, piperine, radiation sensitizer

Practical Application: Piperine induces enhanced radiosensitization of colon cancer cell line (HT-29) by interfering with the cancer cell line proliferation, DNA damage, and apoptosis.

1. INTRODUCTION

Most of the current treatment strategies for cancer show limited improvement as the patient develops resistance towards chemotherapy and radiotherapy (Hu, Li, Gao, & Cho, 2016; Kyrgiou et al., 2017). Hence, there is an urgent need to develop smarter therapeutic strategies for advanced-stage, therapy-resistant cancers. One approach to improve the efficacy and overcome the radiation resistance is to induce radiosensitization in cancer cells.

Some natural compounds such as curcumin, quercetin, genistein, (Nicholson et al., 1995) danshsensu, wortmannin, and so on, are reported for inducing radiosensitization in cancer cells (Cao et al., 2017; Javvadi, Segan, Tuttle, & Koumenis, 2008; Lagerweij et al., 2016; Ortiz, Lopez, Burguillos, Edreira, & Pinero, 2004; Tang et al., 2018). Natural products owing to their antioxidant and immune-enhancing effects may have improved effects as biological and radiation protectors for normal cells. Screening of more natural compounds may facilitate the discovery of compounds that sensitize the cancer therapy by interfering with cancer regulatory pathway and render possible treatment strategies.

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Piperine is a major plant alkaloid, a phytochemical present in *Piper nigrum* Linn (black pepper) and *Piper longum* Linn (long pepper). Black pepper is one of the most common spices consumed by a large number of populations worldwide. Piperine has been reported to enhance the activity of the anticancer drugs in various drug-resistant cancer cells (Khan, Maryam, Mehmood, Zhang, & Ma, 2015; Li, Krstin, Wang, & Wink, 2018; Manayi, Nabavi, Setzer, & Jafari, 2018; Syed et al., 2017), including colorectal cancer cell line (Bolat et al., 2020). Several effector mechanism of piperine against cancer cell line such as influencing redox homeostatsis, autophagy, cancer stem cell inhibition and endoplasmic reticulum modulation has been postulated earlier (Rather & Bhagat, 2018). Radiosensitizing property of piperine is yet to be understood properly. Given the need for effective therapies to treat colon cancer, we aimed to investigate the effect of piperine pretreatment on colon cancer cells to facilitate radiotherapy treatment and elucidate its molecular mechanism.

2. MATERIALS AND METHODS

Piperine (≥97%), poly-L-Lysine, protease inhibitor cock tail, and dimethyl sulphoxide (DMSO) were purchased from Sigma Aldrich, Bangalore, India. Chemicals such as MTT (3-(4, 5-dimethylthiazolyl-2)-2, 5-diphenyltetrazolium bromide), paraformaldehyde, bovine serum albumin (BSA), triton X 100, propidium iodide, RNase A solution, Dulbecco's Modified Eagles Medium (DMEM), fetal bovine serum (FBS), penicillin and streptomycin solution, L-glutamine, Trypan blue (0.4% solution in Dulbecco's phosphate-buffered saline) were purchased

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ORIGINAL PAPER

Design, synthesis, antibacterial and quorum quenching studies of 1,2,5-trisubstituted 1,2,4-triazoles

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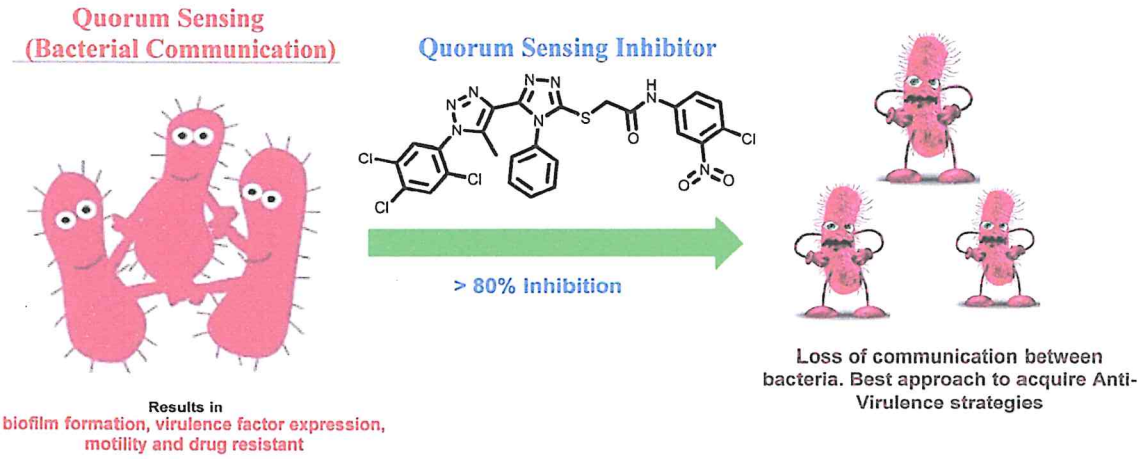
Abstract

In view of discovering novel bioactive molecules, 1-phenyl-1*H*-2-(1-aryl-5-methyl-1*H*-1,2,3-triazol-4-yl)-3-(*N*-aryl-carbamoylmethylthio)-1,2,4-triazoles (**8a–n**) were designed and synthesized in good yield. Preliminary antibacterial activity was tested against *Chromobacterium violaceum* and *Xanthomonas campestris* pv. *Campestris* (*Xcc*). Out of 14 derivatives, compound **8g** selectively possessed antibacterial activity against *C. violaceum*. Further derivatives that possessed an electron-withdrawing group and halogen atoms in *N*-phenylacetamide moiety were moderately active against *Xcc* (plant pathogen). After observing the reduction of violacein production through plate assay, compounds **8a**, **8c**, **8h**, **8i** and **8m** were subjected to quantification of quorum sensing inhibition. Compounds with the electron-withdrawing group in *N*-phenylacetamide moiety showed admirable activity with > 80% inhibition of violacein. Mainly compound **8c** which was inactive against the growth of bacteria were identified as excellent QSI which could be a lead compound for further development.

Graphic abstract

One of the best approaches to acquire anti-virulence strategies and new direction for the discovery of antibacterial drugs



Keywords 1,2,3-Triazole · 1,2,4-Triazole · Quorum quenching · Molecular docking · ADME · *Xcc*

Introduction

Antibiotic resistance is a common problem worldwide due to the selection pressure from human applications of antibiotics. The pathogenic bacteria use various mechanisms to get shelter against antimicrobials. Due to this, bacteria

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SHORT COMMUNICATION

Vanillin derivative inhibits quorum sensing and biofilm formation in *Pseudomonas aeruginosa*: a study in a *Caenorhabditis elegans* infection model

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ABSTRACT

Vanillin and its derivative, (4-((*E*)-(4-hydroxy-2-methylphenylimino) methyl)-2-methoxyphenol (MMP) were showed clear inhibition of violacein and pyocyanin at sub-MICs indicating a possible quorum quenching effect of both the compounds. MMP was able to inhibit the biofilm formation in *Pseudomonas aeruginosa* PAO1 at 125 µg/mL ($p < 0.05$), while vanillin at 250 µg/mL ($p < 0.05$) indicating that they act against quorum sensing regulated biofilm formation. The inhibition of biofilm was confirmed by visualization through fluorescence microscopy followed by docking analysis of molecules against quorum sensing activator proteins. Caenorhabditis *elegans* survival assay revealed that vanillin and MMP were able to increase survival of *C. elegans* from *P. aeruginosa* PAO1 infection. The study showed that the potent features of the MMP and vanillin in inhibiting the quorum sensing regulated virulence and biofilm, which was proved in *C. elegans* infection model as well as molecular docking studies.

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This is to certify that **Ms. Kavya, M.Sc.** Microbiology, from Mangalore University, Mangalagangothri, Konaje has undertaken the study on "***Biofilm inhibitory activity of phytocompounds against Gram negative pathogens***" under the supervision of **Dr. Rekha P.D.**, Professor, Yenepoya Research Centre, Yenepoya (Deemed to be University), Mangalore, Karnataka, from 15th June to 15th August 2019.

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ಸ್ನಾತಕೋತ್ತರ ಸಮಾಜ ಕಾರ್ಯ ಮತ್ತು ಸಂಶೋಧನಾ ವಿಭಾಗ, ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಮಂಗಳಗಂಗೋತ್ರಿ

Dr. P.G. Aquinas
Professor & Chairman

NO.PGS/ SW/2020-21 Date: 18/01/2021

To,

The Director
Yenapoya Hospital
University Road
Deralakatte, Mangalore

Dear Sir/Madam

Sub: **Concurrent field work practicum of MSW final year students with specialization in Medical & Psychiatric Social Work**

Greetings from Department of Social Work, Mangalore University. We wish to bring your kind attention that M.S.W Second Year students have to undergo one year field work practicum in one of the organizations. We are happy to note that yours is one of the reputed organizations in Mangalore and we request you to provide placements for our students, to enable them carry out their field work in your esteemed organization during the academic year 2020-21.

The broader objectives are to provide opportunities for applying the knowledge and the information gained in the classroom to real field situations. This learning experience will provide an opportunity of working with individuals, groups, families, communities and managing organization tasks. There are five broad objectives for concurrent field practicum they are as follows:

1. Understanding both the agency and the clients as systems
2. Developing knowledge of administrative procedures, programme management, and utilizing these skills in practice
3. Developing skills of problem solving process and practice based research
4. Developing as a professional person
5. Using instructions to learn practice

We therefore request you, to kindly accord permission to the following students to undertake field work at your organization. The students will visit your organization on every Wednesday and Thursday (two days) in a week from **20th January, 2021 to 30th September 2021**. The information collected by the students from your organization will be kept confidential and used for academic purpose only.

The students will follow the COVID 19(SOP) of the Govt. of Karnataka and your institution while at any fieldwork.

With regards,

Name of the student that will be placed in your organization are:

1) Deepa Chowdary 2) Nisha M Suvarna

yours sincerely

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