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NAAC 3.3.1 - Paper Publication

Scopus - 2022 - 2023

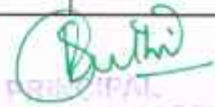
SL No	Title of paper	Name of the Teacher	Name of journal	Year of Publication	ISSN Number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number	
						Link to website of the Journal	Link to article / paper / abstract of the article
1	A COMPARATIVE STUDY ON PRE- AND POST-OPERATIVE QUALITY OF LIFE OF HERNIA PATIENTS	Dr. Krishna Ravi	RESEARCH JOURNAL OF PHARMACY AND TECHNOLOGY	2023	0974-3618	https://www.rjptonline.org/	https://rjptonline.org/abstractview.aspx?pid=2023-16-1-8
2	A REVIEW OF CLINICAL AND PRECLINICAL STUDIES ON THE THERAPEUTIC POTENTIAL OF BLACK SEEDS (NIGELLA SATIVA) IN THE MANAGEMENT OF POLYCYSTIC OVARIAN SYNDROME (PCOS)	DR. B. Raj Kapoor	JOURNAL OF PHARMACOPUNCTURE	2023	2093-6966	https://www.journal-jop.org/main.html	https://www.journal-jop.org/journal/view.html?doi=10.3831/KPI.2023.26.1.1
3	A REVIEW ON SUN EXPOSURE AND SKIN DISEASES	DR. R. Kameswaran	INDIAN JOURNAL OF DERMATOLOGY	2022	195154	https://www.e-ijd.org/	https://www.ncbi.nlm.nih.gov/pmc/articles/pmc9971785/
4	A SYSTEMATIC REVIEW ON SARS-COVID-2: RISK AND ITS COMORBIDITIES	DR. R. Kameswaran	JOURNAL OF MEDICAL PHARMACEUTICAL AND ALLIED SCIENCES	2022	23207418	https://www.impas.com/	https://impas.com/admin/assets/article_issue/1648219387IMPAS JANUARY - FEBRUARY 2022.pdf




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9	EVALUATION OF KNOWLEDGE, ATTITUDE AND PRACTICE OF COMMUNITY PHARMACISTS IN ORAL CONTRACEPTIVES, COUNSELING AND DISPENSING IN TEHRAN, IRAN	DR. K. Krishnaveni	JOURNAL OF PHARMACEUTICAL NEGATIVE RESULTS	2022	0976-9234	https://www.pnrjournal.com/index.php/home/about	https://www.pnrjournal.com/index.php/home/article/view/722




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10	EXPERIMENTAL DESIGN APPROACH TO FABRICATE AND OPTIMIZE FLOATING TABLETS OF LEVOFLOXACIN FOR HELICOBACTER PYLORI INFECTION	DR. R. Sambathkumar	INTERNATIONAL JOURNAL OF APPLIED PHARMACEUTICS	2022	0975-7058	https://journals.innovareacademics.in/index.php/ijap/index	https://journals.innovareacademics.in/index.php/ijap/article/view/45809/27227
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13	ROLE OF SUPPLEMENTS IN THE MANAGEMENT OF COVID-19 - A COMPREHENSIVE REVIEW	DR. B. Raj Kapoor	BENTHAM SCIENCE	2023	1875-5704	https://www.benthamscience.com/	https://pubmed.ncbi.nlm.nih.gov/36896901/
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15	THERAPEUTIC POTENTIALS OF BLACK SEEDS (NIGELLA SATIVA) IN THE MANAGEMENT OF COVID-19 -A REVIEW OF CLINICAL AND IN-SILICO STUDIES	DR. B. Raj Kapoor	BENTHAM SCIENCE - ANTI-INFECTIVE AGENTS	2022	2211-3533	https://benthamscience.com/public/journals/anti-infective-agents	https://www.eurekaselect.com/article/125284
16	SIDA CORDATA ASSISTED BIO-INSPIRED SILVER NANOPARTICLES AND ITS ANTIMICROBIAL, FREE-RADICAL SCAVENGING, TYROSINASE INHIBITION, AND PHOTOCATALYTIC ACTIVITY (4 IN 1 SYSTEM)	DR. M. Vijayabaskaran	PARTICULATE SCIENCE AND TECHNOLOGY	2022	1548-0046	https://www.tandfonline.com/journals/upst20	https://www.tandfonline.com/doi/full/10.1080/02726351.2022.2129116




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(Home.aspx)

Research Journal of Pharmacy and Technology

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ISSN

0974-360X (Online)

0974-3618 (Print)

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A Comparative Study on Pre- and Post-operative Quality of life of Hernia patients (AbstractView.aspx?PID=2023-16-1-8)

Author(s): Reeja T Reji (<search.aspx?key=Reeja T Reji>), Athira Roy (<search.aspx?key=Athira Roy>), Krishna Ravi (<search.aspx?key=Krishna Ravi>), R Sambath Kumar (<search.aspx?key=R Sambath Kumar>)

Email(s): drkrishnaravi.7kr@gmail.com (<mailto:drkrishnaravi.7kr@gmail.com>), krish.krishna.7kr@gmail.com (<mailto:krish.krishna.7kr@gmail.com>)

DOI: 10.52711/0974-360X.2023.00008 (<https://doi.org/10.52711/0974-360X.2023.00008>)

Address: Reeja T Reji¹, Athira Roy¹, Krishna Ravi^{2*}, R Sambath Kumar³

¹Pharm D Intern, Department of Pharmacy Practice, J.K.K. Nattraja College of Pharmacy, Kumarapalayam, Namakkal, Tamil Nadu, India.

²Assistant Professor, Department of Pharmacy Practice, J.K.K. Nattraja College of Pharmacy, Kumarapalayam, Namakkal, Tamil Nadu, India.

³Professor and Principal, Department of Pharmaceutics, J.K.K. Nattraja College of Pharmacy, Kumarapalayam, Namakkal, Tamil Nadu, India.


*Corresponding Author

Published In: Volume - 16, Issue - 1, Year - 2023 (Issues.aspx?VID=16&IID=1)

Keywords:

Hernia () EuraHS scale () Quality of life () Hernia repair () Laproscopic surgery ()




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A Review of Clinical and Preclinical Studies on the Therapeutic Potential of Black Seeds (*Nigella sativa*) in the Management of Polycystic Ovarian Syndrome (PCOS)

Raj Kapoor Balasubramanian^{1*}, Naina Mohamed Pakkir Maideen², Sudha Muthusamy³,
Mirunalini Gobinath⁴

¹Department of Pharmacology, J.K.K. Nattraja College of Pharmacy, Komarapalayam, Tamilnadu, India

²Department of Clinical Pharmacy, Dubai Health Authority, Dubai, United Arab Emirates

³Department of Pharmacology, The Erode College of Pharmacy, Erode, Tamilnadu, India

⁴Ratnam Institute of Pharmacy, Nellore, Andhra Pradesh, India

Received February 20, 2022

Reviewed October 18, 2022

Accepted February 15, 2023

Objectives: Polycystic ovary syndrome (PCOS) is a condition that occurs frequently among women of reproductive age and is a polygenic, multifactorial, endocrine, and metabolic disorder. PCOS is becoming more common as a result of risk factors such as current lifestyle, overnutrition, and stress. The use of traditional herbal medicine is higher among the global population. Hence, this review article focuses on the potential of *Nigella sativa* to manage women with PCOS.

Methods: A literature search was carried out using databases including Medline, Google Scholar, EBSCO, Embase, and Science Direct, as well as reference lists, to identify relevant publications that support the use of *N. sativa* in the management of women with PCOS.

Results: Several clinical and preclinical studies have demonstrated that the major bioactive constituent of black seed (*N. sativa*), thymoquinone, has potential for managing women with PCOS. Moreover, *N. sativa* may help to manage oligomenorrhea and amenorrhea in women with PCOS through its anti-inflammatory and antioxidant properties.

Conclusion: *N. sativa* has potential for use as a herbal medicine for managing women with PCOS as an integrative medicine along with traditional and modern medicine in conjunction with calorie restriction and regular exercise.

Keywords: *nigella sativa*, black seeds, thymoquinone, polycystic ovarian syndrome, anti-inflammatory, antioxidant

*Corresponding Author

Raj Kapoor Balasubramanian
Department of Pharmacology, J.K.K.
Nattraja College of Pharmacy, NH-544
(Salem to Coimbatore National Highway),
Komarapalayam, Tamilnadu 638183,
India
Tel: +91-960-099-7478
E-mail: rajkapoorb@gmail.com

INTRODUCTION

Ametabolic polycystic ovary syndrome (PCOS) is a condition that occurs frequently among women of reproductive age and it is an ametabolic and endocrine disorder. The global prevalence of PCOS has been estimated to be 6-26% [1]. Endocrinological changes caused by PCOS include increased plasma exposure to luteinizing hormone (LH), estradiol, testosterone, epiandrosterone, prolactin, and insulin, as well as decreased serum levels of progesterone, follicle-stimulating hormone

(FSH), sex hormone-binding globulin (SHBG), and hypothyroidism [2], while metabolic changes associated with PCOS include visceral obesity, insulin resistance, and hyperinsulinemia [3]. Polycystic ovaries are common in approximately 75% of anovulatory women. The incidence of PCOS is increasing, mainly due to risk factors such as current lifestyle, diet, and stress [4].

PCOS is caused by multiple factors, including insulin resistance, hyperinsulinemia, hyperandrogenism, and obesity [5]. Insulin resistance induces excessive release of insulin (hyperinsulinemia), which results in diminished SHBG levels and



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Indian J Dermatol. 2022 Sep-Oct; 67(5): 625.

doi: [10.4103/ijd.ijd_1092_20](https://doi.org/10.4103/ijd.ijd_1092_20)

PMCID: [PMC9971785](https://pubmed.ncbi.nlm.nih.gov/36865856/)

PMID: [36865856](https://pubmed.ncbi.nlm.nih.gov/36865856/)

A Review on Sun Exposure and Skin Diseases

[KA Merin](#), [Merin Shaji](#), and [R Kameswaran](#)¹

Abstract

Skin is the thin layer of tissue forming the natural integumentary system of the body that acts as a barrier to protect it from exogenous and endogenous factors that induce undesirable biological responses in the body. Among these risk factors, skin damage triggered by solar ultraviolet radiation (UVR) is an escalating problem in dermatology with an increased incidence of acute and chronic cutaneous reactions. Several epidemiological studies have provided evidence for both beneficial and harmful effects of sunlight, particularly the solar UVR exposure of human beings. Due to overexposure to solar UVR on the earth's surface, outdoor professionals such as farmers, rural workers, builders and road workers are most vulnerable to developing occupational skin diseases. Indoor tanning is also associated with increased risks for various dermatological diseases. Sunburn is described as the erythematic acute cutaneous response in addition to increased melanin and apoptosis of keratinocytes to prevent skin carcinoma. Alterations in molecular, pigimentary and morphological characteristics cause carcinogenic progression in skin malignancies and premature ageing of the skin. Solar UV damage leads to immunosuppressive skin diseases such as phototoxic and photoallergic reactions. UV-induced pigmentation persists for a longer time, called long-lasting pigmentation. Sunscreen is the most mentioned skin protective behaviour and it is the most promoted part of the sun smart message along with other effective skin protection strategies such as clothing, that is, long sleeves, hats and sunglasses.

KEY WORDS: *Skin, Sun exposure, UVR*

Introduction




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Review article

A systematic review on SARS-COVID-2: Risk and its comorbidities

Dharani Shrinivasan VP, Kameswaran Ramalingam *, Senthil Madasamy, Sambathkumar Ramanathan

J.K.K.Natraja College of Pharmacy, Kumarapalayam, Namakkal, Tamil Nadu, India

ABSTRACT

Since 2019 November, an outbreak of COVID-19 arose and became a major public health emergency of international concern. A comprehensive case series from China was published by the New Coronavirus Pneumonia Emergency Response Epidemiology Team, which indicated an overall fatality rate of 2.3 percent, which climbed to 6.0 percent in persons with high blood pressure. The elderly and people with underlying medical problems, such as cardiovascular disease, diabetes, chronic respiratory diseases and cancer are more likely to develop serious illnesses. An electronic literature search was carried out by the search engines like PUBMED, Google scholar, etc. Comorbidities included in this study such as diabetes, hypertension, asthma, cardiovascular risk factors, cerebrovascular conditions. The result was the most of the comorbid caused was hypertension. By the above systemic review, it was concluded that the most comorbid condition hypertension followed by diabetes mellitus, hence the mortality rate also seems to be higher in these two cases.

Keywords: COVID-19, Comorbidities, Clinical investigations, Morbidity and mortality, Hypertension and diabetes mellitus.

Received - 01-11-2021, Accepted- 16-01-2022

Correspondence: Kameswaran Ramalingam * ✉ kameswaranjothi@gmail.com

Department of Pharmacy Practice, J.K.K.Natraja College of Pharmacy, Kumarapalayam, Namakkal, Tamil Nadu, India.

INTRODUCTION

Since 2019 November, an outbreak of COVID-19 arose and became a major public health emergency of international concern. This has been developed from the severe acute respiratory syndrome, known as SARS-COVID-2. This has been initially started in Wuhan, China, and spread quickly to over 180 countries^[1]. Coronaviruses are single-stranded RNA viruses with a high capacity for rapid mutations and recombination's that cause respiratory or intestinal infections in humans and animals. COVID-19 virus infection occurs by coupling the protein S in the virus with the angiotensin converting enzyme 2 (ACE2), which is located in the lungs and acts as a receptor for the virus^[2]. The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team published a large case series from China; they found an overall case fatality rate of 2.3% (1023 of 44,672 confirmed cases), which increased to 6.0% for people with hypertension^[3].

According to the World Health Organization (WHO), the majority of people infected with the COVID-19 virus had suffered from mild to moderate respiratory illnesses and recovered without special treatment. The Orderly and people with underlying medical problems like disorder, diabetes, chronic respiratory illness, and cancer are more likely to develop serious illnesses. The most common symptoms of the SARS-COVID-2 are fever, dry cough, tiredness, the less common include sore throat, diarrhoea,

conjunctivitis, and serious include difficulty in breathing or shortness of breath, chest pain and loss of speech or movement. These clinical manifestations may give rise to many conditions which may worsen the health condition i.e., morbidity and mortality of the individuals who have been affected by the COVID-19. These data were reported without adjustment for age. Both the mortality rates from COVID-19 and the prevalence of hypertension increase with age, reaching 8.0% and more than 50% in the age group 70 to 79 years, respectively^[4]. The morbidity caused by the COVID-19 is more than 80% of deaths occur in people over age 65, and more than 95% of deaths occur in people older than 45. This study may give a comprehensive review of the risk of the COVID-19 virus-affected patients by their previous comorbid conditions.

METHODOLOGY

An electronic literature search was carried out by the search engines like PUBMED, Google scholar, etc., The articles were selected based on the criteria which belong to the topic like COVID-19, comorbidities: clinical features, diabetes, and hypertension-induced COVID-19. From these criteria, the articles were selected and reviewed for the topic from the years 2020, 2021. Several articles were reviewed and preprints were taken. Comorbidities included in this study were diabetes, hypertension, asthma, cardiovascular risk



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APPLICATION OF IONOTROPIC GELATION TECHNIQUE IN FORMULATING AND ASSESSING LEVOFLOXACIN HEMIHYDRATE LOADED MICROSPHERES

R. Sambath Kumar^{1*}, S. Manodhini Elakkiya²

¹Department of Pharmaceutics, The Erode college of pharmacy, Vallipurathanpalayam, Erode – 638 112, Tamilnadu, India.

²Department of Pharmaceutics, J. K. K. Nattraja college of pharmacy, Kumarapalayam, Namakkal, India, Affiliated by The Tamil Nadu Dr. M.G.R Medical University, Chennai, Tamilnadu, India.

ABSTRACT

Aim: The aim is to formulate and evaluate Levofloxacin hemihydrate loaded microspheres. **Methods:** Microspheres were prepared by ionotropic gelation method. To achieve the gastro retentive activity in this study by blending polymers. **Results:** In this work, a mixture of polymers, including Carbopol 934P and HPMC K100M, was used to obtain the gastroretentive property. Levofloxacin hemihydrate-loaded microspheres ranged in drug concentration from 46.2% to 53%. The prepared microspheres have a range in encapsulation efficiency of 62.1% to 82%. Angle of repose micrometric parameters range from 26.14° to 27.99°, bulk density is between 0.27g/ml and 0.31g/ml, tapped density is between 0.33g/ml and 0.37g/ml, compressibility index is between 12.2% and 15.9%, and hausner's ratio is between 1.12 and 1.17. By combining the polymers of carbopol 934P and HPMC K 100M, drug release was increased.

Keywords: Levofloxacin hemihydrate, Carbopol 934P, HPMC K100M, Ionotropic gelation technique.

INTRODUCTION

Marshall and Warren were the ones who first discovered and cultivated *helicobacter pylori* (*H. pylori*), also known as campylobacter pylori disease, in humans^[1] It is a gram-negative, spiral-shaped, microaerophilic bacterium that has a high stomach pH and many polar flagella for motility (1.5 to 3.5) The ability of *H. pylori* to create urease, which may hydrolyze gastric urea to release ammonia and neutralize the stomach acid while raising the periplasmic pH to 4.0-6.0, is one of the organism's well-known biochemical traits^[2-3] Human stomach biopsy samples typically include *H. pylori* in spiral form. The bacterial cells change from their normal spiral shape to coccoid ones as they age.^[4]

Non-spore-forming microorganisms can convert into a latent coccoid form when exposed to unfavorable conditions (such as changes in temperature or pH, prolonged fasting when cultivated, or use of antibacterial medications).^[5]

Also, it is widespread around the world and is influenced by a variety of factors, including host, virulence, and environmental factors that are brought on by peptic ulcer, chronic gastritis, and stomach cancer.^[6]




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Assessment on knowledge and perception regarding health risks of pesticide usage among farmers

Priyanka Anbazhagan¹, Alby Anna Wilson¹, Venkateswaramurthy Nallasamy¹, Sambathkumar Ramanathan²

¹Department of Pharmacy Practice, J.K.K.Natraja College of Pharmacy, Tamil Nadu, India

²Department of Pharmaceutics, J.K.K.Natraja College of Pharmacy, Tamil Nadu, India

Article Info

Article history:

Received Aug 13, 2021

Revised Aug 22, 2022

Accepted Aug 8, 2022

Keywords:

Awareness

Farmers

Health risks

Pesticide toxicity

Pesticideusage

ABSTRACT

Globally, pesticides are essential substances that have significant importance in increasing food production and pest management. Although, the serious concern about the health risk of pesticide toxicity should be investigated. The aim of the study is to assess the knowledge and perception of health risks of pesticide usage among farmers. This online-based descriptive cross-sectional study was conducted among farmers in Namakkal district, Tamil Nadu, India. A validated questionnaire was prepared, assessing the sociodemographic and analyzing the level of awareness, perception of pesticide usage among farmers. There were 412 farmers participated, in which 98.5% use pesticides and among them, 72.4% of farmers do not use personal protective equipment (PPE) on pesticide application. Hence, 68% are not aware of the harmful effects of pesticides even though 94.5% experienced health related problems while using them. Therefore, 95.4% of farmers think it is necessary to create awareness about safe handling practices and health risks regarding the usage of pesticides. Our study revealed that farmers do not have adequate knowledge about safe pesticide handling and are not aware of pesticide toxicity levels along with the risk associated with the degree of toxicity which is essential for implementing strategies regarding pesticide safety education and training.

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Corresponding Author:

N. Venkateswaramurthy

Department of Pharmacy Practice, J.K.K Natraja College of Pharmacy

Kumarapalayam, Namakkal District, Tamil Nadu, 638183, India

Email: venkateswaramurthy.n@jkkn.ac.in

1. INTRODUCTION


As the world's population is predicted to reach over 10 billion by 2050, increasing food production is the top priority for all countries. According to evidence, the global population is growing at a rate of 97 million people each year [1]. Herbicides, insecticides, fungicides, nematicides, fertilisers, and soil amendments are currently employed in greater quantities than in the past to increase crop yield [2]. Pesticides can thus be viewed as a cost-effective, labor-saving, and effective pest management technique that is widely used in most agricultural production sectors [1].

Despite their widespread usage and popularity, pesticides have prompted severe concerns about health risks coming from farmer exposure when mixing and applying pesticides or working in treated fields, as well as residues on food and drinking water for the general public [3]. These actions have resulted in some unintentional poisonings, and even routine pesticide use can endanger farmers' health in the short and long term, as well as impair the ecosystem [3].

Pesticide poisoning and death are more common in developing nations due to lax workplace safety standards, a lack of personal protective equipment (PPE), poor hygiene, illiteracy, and a lack of understanding

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ISSN

0974-360X (Online)

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Caregivers' Quality of Life: Comparative Analysis of Psychiatric ward and General Caregivers Quality of Life (AbstractView.aspx?PID=2022-15-10-45)

Author(s): Venkateswaramurthy N (search.aspx?key=Venkateswaramurthy N), Syed Munavvar VT (search.aspx?key=Syed Munavvar VT), Sudha M (search.aspx?key=Sudha M), Sambathkumar. R (search.aspx?key=Sambathkumar. R)

Email(s): venkateswaramurthy.n@jkkn.ac.in (mailto:venkateswaramurthy.n@jkkn.ac.in)

DOI: 10.52711/0974-360X.2022.00772 (https://doi.org/10.52711/0974-360X.2022.00772)

Address: Venkateswaramurthy N*, Syed Munavvar VT, Sudha M., Sambathkumar. R
Department of Pharmacy Practice, J. K. K. Nattraja College of Pharmacy, Kumarapalayam - 638183, India.
*Corresponding Author


Published In: Volume - 15, Issue - 10, Year - 2022 (Issues.aspx?VID=15&IID=10)

Keywords: Caregiver (), mentally ill patients (), quality of life (), World Health Organization quality of life. ()



Cite this article:

Venkateswaramurthy N, Syed Munavvar VT, Sudha M., Sambathkumar. R. Caregivers' Quality of Life: Comparative Analysis of Psychiatric ward and General Caregivers Quality


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DESIGN AND DEVELOPMENT OF LEVOFLOXACIN HEMIHYDRATE GASTRORETENTIVE DRUG DELIVERY SYSTEM OF FOR H. PYLORI INFECTION

Dr. R. Sambath Kumar¹, S. Manodhini Elakkiya², Dr. N. Venkateswaramurthy³, S. Divyadharshini⁴, Deepika Viswanathan⁴

¹Department of Pharmaceutics, Erode College of Pharmacy, Perundurai main Road, Veppampalayam, Valliparathampalayam (Po), Erode, Tamil Nadu.

^{2,3}Department of Pharmaceutics, J. K. K. Nattraja College of Pharmacy, Komarapalayam, Namakkal, India, Affiliated by The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

⁴Department of Pharmacy practice, J. K. K. Nattraja College of Pharmacy, Komarapalayam, Namakkal, India, Affiliated by The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

DOI: 10.47750/pnr.2023.14.02.292

Abstract

Aim: To prepare mucoadhesive microspheres for the treatment of H. Pylori infection.

Methods: Mucoadhesive microspheres were prepared by emulsion solvent evaporation method. To achieve the gastro retentive activity in this study by blending polymers.

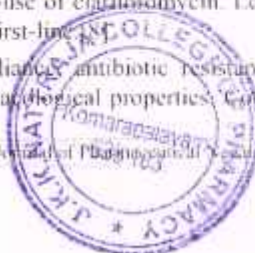
Results: To achieve the gastroretentive property in this study, a combination of polymers, such as Chitosan and HPMC K15M were used. The percentage yield for LVX loaded microspheres were found to be in the range of 55.84 % to 61.56 %, respectively. The drug content of the LVX loaded microspheres varied from 49.23% to 61.23%. The encapsulation efficiency of the prepared microspheres varied from 58.52% to 65.76%. The particle size of microspheres of all the formulations ranged from 220.31 µm to 302.46 µm. Average Mucoadhesion in the percentage of all the formulations was found to range from 67.85 % to 91.03 %. Drug release was retarded by increasing the proportion of chitosan and HPMC K15 M, respectively. The slope of the regression line from the Higuchi plot indicates the rate of drug release and thus confirms that the mode of release was diffusion. No remarkable changes were observed in drug content, mucoadhesiveness and in vitro drug release in stability studies.

INTRODUCTION

Helicobacter pylori (H. pylori), or formally known as Campylobacter pylori, is a Gram-negative, micro-aerophilic, spiral microorganism that can colonize the healthy stomach lining is associated with gastritis, peptic ulcer disease, mucosa-associated lymphoid tissue (MALT) lymphoma, and gastric cancer.[1-3] The direct transmission from person to person, either oral or fecal-oral route or both, is expected to lead to new infection. In patients with duodenal ulcers, the inflammation of the gastric mucosa induced by the infection is most pronounced in the non-acid-secreting antral region of the stomach and stimulates the increased release of gastrin.[4] As with duodenal ulcers, eradicating the infection usually cures the disease, provided that the gastric ulcer is not due to NSAIDs. Gastric cancers (i.e., those distal to the gastroesophageal junction).[5] The risk of cancer is highest among patients in whom the infection induces inflammation of both the antral and fundic mucosa.

H. pylori infection and the presence of gastric MALT lymphomas eradication of the infection causes regression of most localized gastric MALT lymphomas.[6] The prevalence of H. pylori infection is lower among patients with gastroesophageal reflux disease (GERD) and those with oesophageal adenocarcinoma. A recent meta-analysis showed no significant association between H. pylori eradication and an increased risk of GERD.[7] Bismuth-based quadruple therapy (BQT), concomitant/non-bismuth quadruple therapy, and clarithromycin-based triple therapy were recommended first-line options in the 2017 ACG guideline. Bismuth has a synergistic effect with several antibiotics that is independent of clarithromycin and metronidazole resistance. In patients who fail first-line treatment, BQT or levofloxacin-based triple therapy are second-line options that avoid the re-use of clarithromycin. Levofloxacin-based triple therapy should only be used the second line if Levofloxacin was not used first-line.

Compliance, antibiotic resistance, disease entity associated with the H. pylori infection, bacterial virulence factors and pharmacological properties. Compliance is a crucial element for successful H pylori eradication. Antibiotic resistance is the



Evaluation of Knowledge, Attitude and Practice of Community Pharmacists in Oral Contraceptives, Counseling and Dispensing in Tehran, Iran

Mohammad Ghaderi¹, K.Krishnaveni^{2*}

¹Intern, Department of Pharmacy Practice, JKKN College of Pharmacy, Namakkal, Tamil Nadu, India.

²Associate Professor, Department of Pharmacy Practice, JKKN College of Pharmacy, Namakkal, Tamil Nadu, India.
E-mail: Krishnaveni.k@jkkn.ac.in

Abstract

Background: Unwanted pregnancy leads to economical and health burden on females and societies. To avoid this, different methods of contraception have been developed. Oral contraceptives as a method, due to less cost and least failure, have found its way through consumers. Important aspect of this method is proper consumption to minimize risk of pregnancy. Pharmacists play role in improving knowledge and compliance of consumers. **Method:** The study was online cross sectional, conducted over Tehran province in Iran. Questionnaire distributed by online over community pharmacists. Sample was found to be 71 (confidence interval 90% and margin error of 10%). Chi Square test and Correlation-Regression were used for analysis of data. **Results:** While most of respondents were female with less than 5 years experiences, there were found to have poor knowledge in dispensing and counseling about oral contraceptives. Approximately 69% of respondents had good practice. No significant association (p -value < 0.05) was obtained between the dispensing practice of respondents and their knowledge level. Knowledge and practice towards oral contraceptives were higher among the female respondents. **Conclusion:** Poor knowledge, good attitude and good practice of community pharmacists regarding dispensing and counseling of OCPs were observed.

Keywords: Oral Contraceptive, Community Pharmacy, Pharm-D, Tehran, Pregnancy.

DOI: 10.47750/pnr.2022.13.S03.149

INTRODUCTION

It may seem questionable while finding about 200 million female over the world not using any contraception methods. [1] This avoidance increases the risk of unintended pregnancy. Unintended pregnancy which rates about 50% in USA [2] and 26% in Iran [3] has different consequences from economical burden, health issues, abortion and even death. The reasons for this unprotected coitus can be named as accessibility to pills and mechanical barriers, cost, [4] fear of side effects and lack of knowledge. Globally, it is estimated that 22% of such unintended pregnancies are terminated with unsafe techniques, and 18% end up in unplanned births thus imposing an economic burden on the health system. [5] Oral contraceptives as a trustable method of contraception have become popular however it needs special instruction which necessitates customers notified of it. In this between, community pharmacists as frontiers of health system play prominent role in dissemination of information and providing counseling to consumers about oral contraceptives. Community Pharmacy Practitioners (CPPs) for doing their job well need good knowledge, attitude and practice (KAP). Here we aimed to assess KAP

of CPPs in Tehran, about oral contraceptives dispensing and counseling.

METHOD

2.1. Study design, setting and population

An online cross sectional study was conducted at community pharmacists who were working in Tehran province, Iran. Study population comprised of community pharmacists registered by Iran FDA. *Inclusion criteria in this research were registered community pharmacists who located in Tehran province, Iran.*

2.2. Sample size and sampling method

Sample size was calculated by Rao software with the assumption of 90% confidence interval, 10% margin of error. The final sample size was found to be 70 participants. Sampling method used in the study was simple random sampling. A link of questionnaire has been sent to some random WhatsApp numbers belonging to pharmacists. The list and numbers obtained from official resources.



EXPERIMENTAL DESIGN APPROACH TO FABRICATE AND OPTIMIZE FLOATING TABLETS OF LEVOFLOXACIN FOR *HELICOBACTER PYLORI* INFECTION

JAGANATHAN K.^{1,2}, VENKATESWARAMURTHY N.², NEELAMEGARAJAN R.², KANNAN C.², SAMBATHKUMAR R.^{2*}

¹The Tamilnadu Dr MGR Medical University, Chennai, Tamilnadu, India 600032, ²Department of Pharmaceutics, J. K. K. Nattraja College of Pharmacy, Kumarapalayam, Tamilnadu, India 638183

Email: sambathju2002@yahoo.co.in

Received: 28 Jul 2022, Revised and Accepted: 22 Sep 2022

ABSTRACT

Objective: To improve the treatment of *H. pylori* infection, by achieving the required bactericidal concentrations of antibiotics in the stomach, by delivering the antibiotics to the mucus layer and release the drug at the site of infection for a prolonged period would be significantly more effective than conventional dosage forms.

Methods: The experimental method of the research was designed to prepare Levofloxacin floating by using Hydroxypropyl Methylcellulose (HPMC K4M), Hydroxypropyl Methylcellulose (HPMC K100M) and Xanthan gum by Three-level Box-Behnken design optimization method. The prepared tablets were evaluated for Thickness, Hardness, Friability, Weight variation, Swelling index (SI), Floating lag time (FLT) and Time required to release 90% of the drug from the tablet ($T_{90\%}$).

Results: It was found that the Thickness- 3.12 ± 0.11 mm to 3.28 ± 0.10 mm, Hardness- 4.52 ± 0.36 kg/cm² to 4.81 ± 0.24 kg/cm², Friability- 0.81 ± 0.02 g to 0.86 ± 0.12 g, Weight variation- 480 ± 1.90 mg to 523 ± 0.89 mg, Swelling index (SI)- $61.9 \pm 0.624\%$ to $99.95 \pm 0.226\%$, Floating lag time (FLT)- 81.12 ± 0.63 s to 119.7 ± 0.567 s and Time required to release 90% of the drug from the tablet ($T_{90\%}$)- 7.0 ± 0.55 h to 10.33 ± 0.289 h. HPMC K100M and Xanthan gum showed good swelling as compared to HPMC K4M. The study revealed that HPMC K100M grade had a significant effect on drug release.

Conclusion: The developed gastro-floating tablets can extend levofloxacin duration in the stomach and produce a prolonged release effect. The prepared levofloxacin floating tablet oral drug delivery system appears to be a promising choice for the efficient eradication of *H. pylori*

Keywords: Levofloxacin, Floating tablet, *Helicobacter pylori*, Box-Behnken design, HPMC K4M, HPMC K100M, Xanthan gum

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INTRODUCTION

Helicobacter pylori (*H. pylori*) is a gram-negative bacterium found in the stomach of about half of the world's population [1]. *H. pylori* infection is a strong risk factor for gastroduodenal ulcer disease, gastric cancer, and other types of gastric and extra gastric disease. This infection is linked up to 85% of gastric ulcers and 95% of duodenal ulcers, and eliminating the organism reduces the risk of ulcer recurrence dramatically [2]. The World Health Organization's (WHO) International Agency for Research on Cancer (IARC) classified *H. pylori* as a "category 1" pathogen (definite carcinogen) and suggested that *H. pylori* eradication is considered to lower the risk of stomach cancer, which kills 738,000 people worldwide each year. According to reports, eradicating *H. pylori* lowers the risk of stomach cancer [3, 4]. The Maastricht V Consensus Report and the guidelines established by the American College of Gastroenterology both suggested using levofloxacin-based triple therapy as a second-line treatment option [5, 6]. However, eradicating *H. pylori* successfully and completely has become a challenge in recent years.

Recent biopsy studies [7, 8] and cell culture infection models have indicated that *H. pylori* penetrate the gastric mucus layer and attach to various phospholipids and glycolipids in the mucus gel. As a result, both the lumen of the stomach and the gastric blood supply limit antibiotic availability in the mucus layer for a prolonged period. Also, the traditional drug delivery systems do not stay in the stomach for extended periods, and they are unable to deliver adequate concentrations and fully active antibiotics to the infection site. There is a need for new drug delivery systems to address the inadequacies of conventional delivery systems. Floating drug delivery systems have a bulk density lower than that of gastric fluids, allowing them to stay buoyant and deliver the drug for a longer period of time in the stomach without being impacted by the gastric emptying rate.

Hence, in the present study, gastro retentive floating Levofloxacin tablets for the eradication of *H. pylori*, were prepared using Xanthan

gum, HPMC K100M and HPMC K4M and evaluated to overcome the shortcomings of conventional delivery of levofloxacin.

MATERIALS AND METHODS

Materials

Xanthan gum was purchased from SD Fine Chem Limited, Mumbai. HPMC K100M and HPMC K4M and Levofloxacin hemihydrate were gifted by MICRO LABS LIMITED, Bengaluru. All other used solvents were HPLC grade.

Experimental design

A three-factor, Three-level Box-Behnken design was used for the optimization procedure using Design-Expert® 13 software (Stat-Ease, Inc, USA). The investigated factors (independent variables) were: HPMC K4M (A_1) content HPMC K100M (B_1) and Xanthan gum content (C_1). The levels for these three factors were determined from sufficient preliminary trials. The Swelling index (SI), Floating lag time (FLT) and Time required to release 90% of the drug from the tablet ($T_{90\%}$) were selected as dependent variables as shown in table 1. The experimental design with the corresponding formulations is outlined in table 2.

The statistical model:

$$Y = b_0 + b_1A + b_2B + b_3C + b_{11}AA + b_{22}BB + b_{33}CC + b_{12}AB + b_{23}BC + b_{13}AC + E$$

Compatibility studies

Fourier transform infrared (FTIR) spectroscopy and differential scanning calorimetry (DSC) was used to study the compatibility of Levofloxacin with excipients.

Fourier transform infrared (FTIR) spectroscopy

FTIR spectra of Levofloxacin, excipients and physical mixtures (drug: excipient ratio of 1:1) were recorded in the wavelength region 500-4,000 cm⁻¹ using FTIR 8400S (Shimadzu, Japan).



[Signature]
 J.K.K. NATTRAJA COLLEGE OF PHARMACY
 KOMARAPALAYAM - 638 183.



Formulation and evaluation of Buccal mucoadhesive tablets of diclofenac sodium using 2^3 factorial designs

Madhu Tanya Singh¹, Nunavath Raja Shekhar², Goutham Yerrakula³ & Senthil Venkatachalam^{1*}

¹Department of Pharmacology; & ²Department of Pharmaceutical Analysis, JSS College of Pharmacy, JSS Academy of Higher Education & Research, Ooty-643 001, Tamil Nadu, India

³Department of Pharmacology, College of Pharmacy, JSS Academy of Technical Education, Noida-201 301, Uttar Pradesh, India

⁴Department of Pharmaceutics, JKK Nattraja College of Pharmacy, Kumarapalayam-638 183, Tamil Nadu, India

Received 24 December 2022; revised 07 January 2023

Diclofenac sodium is an NSAID (Non-Steroidal anti-inflammatory widely used in the treatment of pain, migraine, and inflammation). It has been observed that Diclofenac undergoes extensive first-pass metabolism when administered using conventional dosage forms through the oral route. The aim of this study is to formulate and evaluate pre-compression, post-compression factors and release kinetics of buccal mucoadhesive tablets formulated by a 2^3 factorial method that can prevent the first-pass metabolism of the drug thereby increasing its bioavailability. This formulation increases patient compliance by reducing its dosing frequency. In these formulations, two polymers polyvinyl pyrrolidone (PVP K30) and Chitosan are used in varying proportions. Eight different formulations were prepared by varying concentrations of the polymers. The buccal mucoadhesive tablets formulated have been evaluated for their general appearance, thickness, hardness, weight variation, friability and other *in vitro* tests such as swelling and dissolution studies. The evaluation studies demonstrated that formulation F8 showed better properties as a buccal mucoadhesive formulation compared to other formulations.

Keywords: Buccal tablets, Diclofenac sodium, Drug release, Mucoadhesion, Mucoadhesive tablets, Release kinetics

Diclofenac is an NSAID (non-steroidal anti-inflammatory) drug that is recommended for the treatment of pyrexia, painful and inflammatory rheumatic and non-rheumatic conditions. It is available in various administration forms, including orally, rectally, and intramuscularly¹. Diclofenac is also used to treat rheumatoid arthritis, menstrual pain, osteoarthritis, dysmenorrhea, ocular inflammation and ankylosing spondylitis. It is completely absorbed orally. Though completely absorbed orally unfortunately it undergoes rapid first-pass hepatic metabolism². Any drug delivery system's goal is to deliver a therapeutic amount of the drug to the desired site of action in the body and to maintain the desired drug concentration. Patients and physicians both agree that tablets are a convenient dosage form³. Administering Diclofenac sodium orally leads to significant first-pass metabolism. However, using the buccal route offers several benefits such as bypassing first-pass metabolism, easy administration, and increased patient compliance^{4,5}. Thus, the goal of this study is to formulate Buccal Mucoadhesive

diclofenac sodium tablets with varying polymer concentrations that can prevent the drug from being extensively metabolized, thereby increasing its bioavailability in systemic circulation⁶. The adhesion of two materials, at least one of which is a mucosal surface, is commonly defined as mucoadhesion⁷. Since gums, tongues, and swallows are factors that affect buccal drug delivery, mucoadhesive polymers are ideally used⁸. This formulation may also reduce dosing frequency, which may improve patient adherence to the medication⁹⁻¹².

Chemicals and Instruments

A gifted sample of Diclofenac sodium standard reference was procured from Mylan Laboratories, Bangalore, Karnataka, India. Acacia gum is manufactured by Finar chemicals (India) Pvt. Ltd., Mannitol, Chitosan and Polyvinyl Pyrrolidone (PVP K30) are manufactured by Molychem, and Magnesium stearate by Kemphasolis used for the formulation. In-house Milli-Q water was used for the dilutions. A pH meter was used for the pH examination and adjustment. The Monsanto hardness tester used for hardness test. A rotary tablet punching machine from Accura was used for tablet punching.

*Correspondence:
E-mail: vsenthil@gmail.com




PRINCIPAL
J.K.K. NATTRAJA COLLEGE OF PHARMACY
KOMARAPALAYAM - 638 183.

Protective Effect of *Annona Squamosa* Fruit Pulp on Motor Responses Following Intra-Medial Forebrain Bundle Injection of 6-OHda In Rat Model of Parkinson Disease

Sudha Muthusamy¹, Shanmuga Sundaram Rajagopal^{2*}, Sambathkumar Ramanathan³

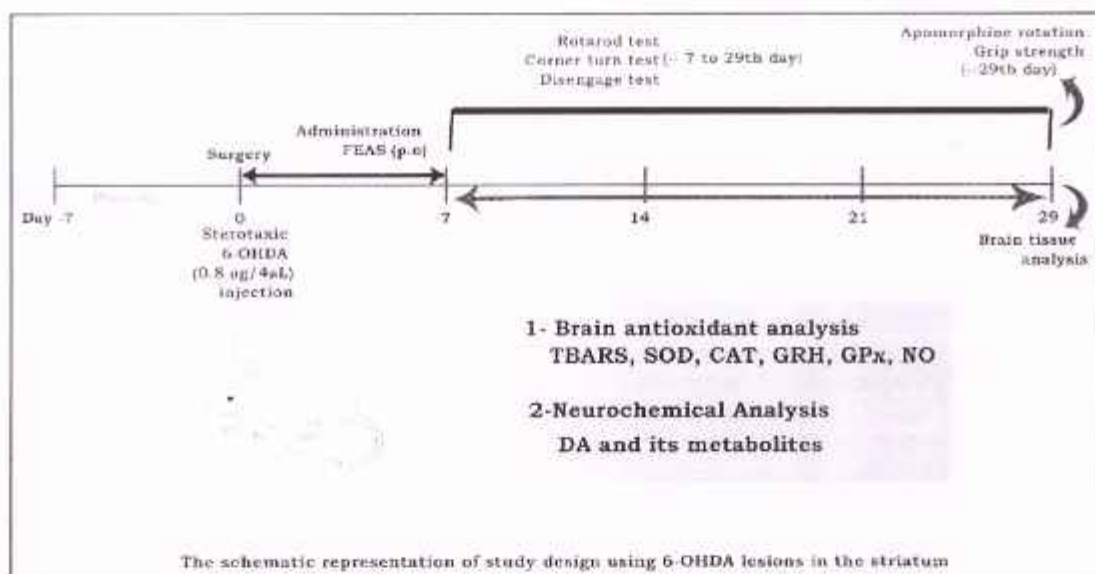
¹Department of Pharmacology, The Erode College of Pharmacy, Veppampalayam – 638 112

²Department of Pharmacology, J.K.K. Nattraja College of Pharmacy, Kumarapalayam – 638 183

³Department of Pharmaceutics, The Erode College of Pharmacy, Veppampalayam – 638 112

*Correspondent author: shansun34@gmail.com

Graphical Abstract



Abstract

Objective: The present study investigated the ethanolic extract of fruit pulp of *Annona squamosa* that ameliorates the 6-OHDA-induced behavioural, biochemical, and neurochemical changes which resemble Parkinson's disease (PD)-like symptoms.

Materials and Methods: Various behavioural

and biochemical parameters were carried out to evaluate the activity of ethanolic extract of fruit pulp of *Annona squamosa* (FEAS) on 6-OHDA treated rats. To determine the therapeutic significance of FEAS on PD, different behavioural tests such as apomorphine rotation, narrow beam maze, rotarod, grip strength, sensorimotor and disengage test and some biochemical tests along with neurochemical findings were

Protective Effect of *Annona Squamosa* Fruit Pulp on Motor Responses



Sudha Muthusamy
 PRINCIPAL
 J.K.K. NATTRAJA COLLEGE OF PHARMACY
 KOMARAPALAYAM – 638 183.



Role of Supplements in the Management of COVID-19 - A Comprehensive Review

Raj Kapoor Balasubramanian^{1*}, Naina Mohamed Pakkir Maideen², Sudha Muthusamy³, Sambathkumar Ramanathan³ and Mohamed Harsath Jahir Hussain⁴

¹Department of Pharmacology, J.K.K. Natraja College of Pharmacy, Komarapalayam, 638 183, TN, India;

²Department of Pharmacy, Dubai Health Authority, Dubai, PB No: 4545, United Arab Emirates; ³Department of Pharmacology, The Erode College of Pharmacy, Vallipurathanpalayam, Erode, 638 112, India; ⁴Ratnam Institute of Pharmacy, Pidathapalur, Nellore, Andhra Pradesh, 524 346, India

Abstract: Coronavirus disease 2019 (COVID-19) is caused by the severe acute respiratory syndrome coronavirus-2 (SARS CoV-2) and patients with COVID-19 may be treated primarily with SARS CoV-2-targeting drugs and the therapeutic agents assisting in the management of COVID-19 complications. This review focuses on the supplements like vitamins, minerals, herbal constituents, and others that help prevent or manage negative outcomes among COVID-19 patients. The literature was searched in databases such as Medline/PubMed Central/PubMed, Google Scholar, Science Direct, EBSCO, Scopus, EMBASE, the Directory of Open Access Journals (DOAJ), and reference lists to identify relevant articles. The vitamins, including vitamin C, and vitamin D, minerals such as zinc, selenium, and copper, herbal constituents like thymoquinone, curcumin, naringenin, quercetin, and glycyrrhizin, and other supplements, including N-acetylcysteine and melatonin. Melatonin have been identified as having the potential to manage patients with COVID-19 along with standard care. Some of the ongoing clinical trials are investigating the effectiveness of different supplements among COVID-19 patients.

Keywords: SARS-CoV-2, COVID-19, vitamin C, vitamin D, zinc, selenium, copper, thymoquinone, curcumin, naringenin, quercetin, glycyrrhizin, N-acetylcysteine, melatonin.

ARTICLE HISTORY

Received: August 22, 2022
Revised: January 09, 2023
Accepted: January 27, 2023

DOI:
10.2174/1573313221000999999



1. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is caused by severe acute respiratory syndrome coronavirus-2 (SARS CoV-2) and it emerged first in Wuhan, China, in December 2019. SARS-CoV-2 has 79.5% genome sequence identity with the coronavirus that caused severe acute respiratory syndrome (SARS) in 2002 [1]. As of 7th June 2022, there were about 530.2 million confirmed cases of COVID-19 recorded in 216 countries, and 6.3 million deaths occurred among them, as per the World Health Organization (WHO) novel Coronavirus (COVID-19) situation board [2]. According to the WHO dashboard, the United States of America (USA) has been the most affected country by COVID-19 and has recorded 100,382,913 cases and 1,102,229 deaths as of November 2022.

The significant symptoms of COVID-19 include high-grade fever, dry cough, and dyspnoea. In addition, patients with COVID-19 may also develop symptoms such as fatigue, chills, a loss of taste or smell, diarrhoea, headache, muscle pain, and sore throat [3]. Moreover, the emergency warning signs of COVID-19 may include dyspnoea, sepsis, septic shock and multi organ failure. The risk of SARS-

CoV-2 infection is higher among the elderly population, the male gender, and persons with comorbidities such as hypertension, obesity, diabetes, and other chronic conditions [4]. In addition, the fatality rate is also higher among them.

The COVID-19 patients admitted to the intensive care unit (ICU) commonly had elevated levels of leukocytes, neutrophils, D-dimer, C-reactive protein (CRP), creatinine, cardiac troponin, procalcitonin, lactate dehydrogenase (LDH), aspartate aminotransferase (AST), alanine aminotransferase (ALT), total bilirubin, and decreased levels of lymphocytes and albumin [1-5]. Moreover, the deceased patients of COVID-19 were observed with leucocytosis and abnormal values of lymphocytes, creatinine, D-dimer, and blood urea nitrogen (BUN) [6-8].

The WHO categorizes COVID-19 patients as mild, moderate, severe, or critical cases based on the severity of their illness [9]. Hypothetically, COVID-19 patients may enter three stages, including stage I (Mild/Early infection phase), stage II (Moderate/Pulmonary phase), and stage III (Severe/hyperinflammatory phase), based on their treatment needs [10]. Multiplication of SARS CoV-2 occurs in stage I and the patients may show no symptoms or mild symptoms such as fever, dry cough, and malaise, lymphopenia and neutrophilia are common at this stage. The patients might be treated symptomatically at home and in household isolation. Antiviral drugs may be used to prevent the progression

*Address correspondence to this author at the Department of Pharmacology, J.K.K. Natraja College of Pharmacy, Komarapalayam, 638 183, TN, India; E-mail: rajkapoorb@gmail.com



J.K.K. NATRAJA COLLEGE OF PHARMACY
KOMARAPALAYAM - 638 183

Synthesis and cytotoxicity of Mannich Base of Benzimidazole Derivatives against Neuroblastoma Cell line

Vasuki B.^{1*}, Mahadevan N.², Sekar V.¹, Vijayabaskaran M.¹ and Senthil V.¹

1. J.K.K. Nattraja College of Pharmacy, Kumarapalayam-638183, Tamil Nadu, INDIA

2. United College of Pharmacy, Coimbatore-641020 (Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai), Tamil Nadu, INDIA

*vasukithiyagu211@gmail.com

Abstract

The present study is to synthesize a novel Mannich base of benzimidazole derivatives and to screen for cytotoxicity in a neuroblastoma cell line using the MTT assay. 2-phenyl benzimidazole, formaldehyde, adamantane 1-carboxylic acid and substituted benzylamine such as 4-methyl, 4-methoxy, 4-chloro, 2-chloro, 4-fluoro, 3-methoxy, 4-trifluoromethyl, 3,4-dichloro and 3,5 bistrifluoromethyl were used to synthesize Mannich bases of (3r, 5r, 7r)-N-Benzyl-N-((2-phenyl-1H-benzo[d]imidazol-1-yl) methyl) adamantane-1-carboxamide. The MTT cell viability assay was performed to determine the half maximal inhibitory concentration (IC₅₀) of synthesized compounds. Neuroblastoma (SK-N-MC) exposed to Mannich base at different concentration of 6.25 µg/mL, 12.5 µg/mL, 25 µg/mL, 50 µg/mL and 100 µg/mL was compared with standard drug.

The IC₅₀ value of the 4-methoxy Mannich base derivative was found to be 74.64 µg/mL. The IC₅₀ values of benzylamine substituted Mannich base such as benzylamine, 4-methyl, 4-chloro, 2-chloro, 4-fluoro, 3-methoxy, 3,4-dichloro, 4-trifluoro methyl and 3,5 bistrifluoromethyl derivatives were found to be 35 µg/mL, 34.08 µg/mL, 27.29 µg/mL, 25.88 µg/mL, 33.11 µg/mL, 52.91 µg/mL, 44.80 µg/mL, 30.87 µg/mL and 55.20 µg/mL respectively. Among the electron withdrawing and electron donating substituents on Mannich bases, 2-chloro benzylamine substituted Mannich base possessed the highest cytotoxicity.

Keywords: Heterocyclic compounds, Condensation, Spectral analysis, Cell viability.

Introduction

Uncontrolled division of abnormal cells in a body part is the root of the condition known as cancer. The World Health Organization (WHO) claims that neoplastic illness is the main killer globally and one of the most formidable afflictions in the world².

A juvenile cancer called neuroblastoma grows in immature sympathetic nervous system cells outside the brain. It is a tumor of the nervous system that develops in the sympathetic ganglia^{9,11}. The most prevalent extra cranial malignant

pediatric tumor is neuroblastoma which usually develops in the paraspinal sympathetic ganglia or adrenal medulla.

Nitrogen heterocycles stand out among the common heterocyclic compounds due to their extensive natural abundance and significant biological, pharmaceutical applications. Benzimidazole heterocyclic scaffolds represent a privileged structural modification well distributed in a number of naturally occurring compounds including vitamin B12. Benzimidazole is structurally related to purine bases exerting significant biological effects^{12,24}.

The compound containing an active hydrogen atom, a primary or secondary amine and formaldehyde is condensed to form a Mannich base. The reaction is known as the Mannich reaction which is a nucleophilic addition reaction. The final product of Mannich base is β amino carbonyl compound^{11,19}. Mannich bases are essential for the advancement of synthetic and pharmaceutical chemistry⁵. The investigations in the literature showed that the Mannich bases are very reactive and easily converted to other compounds. Mannich bases also serve as significant pharmacophores or bioactive leads that are employed to synthesize a variety of possible medicinal values of high potency drugs that possess an amino alkyl chain. Amino alkylation may improve the drug's hydrophilic properties as well as the synthesis of nitrogen containing compounds³.

Mannich base has received a lot of attention because of its numerous pharmacological effects which include anti-cancer²⁷, anti-microbial¹, analgesic⁴, anti-inflammatory¹⁸, anthelmintic⁹, anti-convulsant²², anti-oxidant⁷ and anti-HIV¹⁶. Despite the extensive range of biological activities associated with Mannich bases, knowledge on their toxicity is limited. The lipophilic nature of the benzimidazole helps to easily cross the cell membrane and the amino alkyl group present in Mannich bases exert cytotoxic action relies on the alkylation of thiols inside the cell such as glutathione or cysteine which may sensitize tumor cells to anti-cancer agents or even reverse resistance to drugs¹⁷.

Therefore, we report in the present study synthesis of the Mannich bases of benzimidazole derivatives and evaluate their cytotoxicity by using the MTT (3-(4,5-dimethylthiazol-2-yl) 2,5-diphenyl tetrazolium bromide) assay. The MTT assay method is one of the most widely used colorimetric assays for determining cellular cytotoxicity or cell viability and for evaluating preliminary anticancer activity of both synthetic derivatives and natural products. It is the gold



Therapeutic Potentials of Black Seeds (*Nigella sativa*) in the Management of COVID-19 -A Review of Clinical and *In-silico* Studies

Naina Mohamed Pakkir Maideen¹, Raj Kapoor Balasubramanian^{2*}, Mirunalini Gobinath³, Mohamed Rafiullah⁴, Sudha Muthusamy^{2,5}

¹Clinical Pharmacy, Dubai Health Authority, Dubai, United Arab Emirates; ²Department of Pharmacology, J.K.K. Nattraja College of Pharmacy, Komarapalayam 638 183, India; ³Ratnam Institute of Pharmacy, Pidathapolur, Nellore, Andhra Pradesh 524 346, India; ⁴Strategic Centre for Diabetes Research, College of Medicine, King Saud University, Riyadh, Kingdom of Saudi Arabia; ⁵Department of Pharmacology, The Erode College of Pharmacy, Erode - 638 112, India

Abstract: Background: Coronavirus disease 2019 (COVID-19) is caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), and patients with COVID-19 are managed mainly using repurposed conventional drugs, which target the viral entry and viral replication of SARS CoV-2 along with standard care and supportive therapy.

Objective: This review article focuses on the potential benefits of black seeds (*Nigella sativa*) observed in clinical and *in silico* molecular docking studies of COVID-19.

Methods: The literature was searched using databases such as LitCOVID, Web of Science, Google Scholar, bioRxiv, medRxiv, Science Direct, EBSCO, Scopus, EMBASE, and reference lists to identify published manuscripts or preprints related to the prevention or treatment of COVID-19 with black seeds (*N. sativa*) or their phytoconstituents.

Results: Various clinical studies and *in silico* molecular docking studies determined that black seeds (*N. sativa*) and their bioactive phytoconstituents have potential activity against SARS CoV-2 infection.

Conclusion: Patients with COVID-19 could be managed using black seeds (*N. sativa*) along with supportive care, which would speed up the recovery and decrease the mortality rate. More randomized controlled clinical trials would further establish the safety and efficacy of *N. sativa* in COVID-19 patients.

Keywords: SARS-CoV-2, COVID-19, *Nigella sativa*, black seeds, thymoquinone, nigellidine, nigellone, α -hederin.

1. INTRODUCTION

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection or Coronavirus disease 2019 (COVID-19) emerged first in Wuhan, China, in December 2019. According to the World Health Organization's (WHO) new Coronavirus (COVID-19) Situation Board, as of December 21st, 2021, there were roughly 275 million confirmed cases of COVID-19, with 5.3 million deaths [1].

Coronaviruses are single-stranded RNA enclosed *viruses*, and seven human coronaviruses have been found, including the well-known SARS coronavirus-1 (SARS-CoV-1), Middle East respiratory disease coronavirus (MERS-CoV),

and severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). In 80 percent of cases, the nucleotide sequences of SARS-CoV-1 and SARS-CoV-2 are essentially identical [2-4].

The S1 and S2 subunits of SARS-CoV-1 and SARS-CoV-2 use human angiotensin converting enzyme 2 (hACE2), located in the distal airways, alveoli, and nasal, oral, nasopharyngeal, and oropharyngeal epithelia, as the receptor to infect human cells. The receptor binding domain (RBD) of the S1 subunit initiates binding to hACE2, while the S2 subunit mediates membrane fusion [5-7].

HACE2 is involved in converting angiotensin II to angiotensin 1-7, which enhances vasodilation, and acts as an anti-inflammatory, anti-fibrotic and slows cell proliferation via its interaction with the mas receptor. The functional in-

*Address correspondence to this author at the Department of Pharmacology, J.K.K. Nattraja College of Pharmacy, Komarapalayam, TN, India, E-mail: rajkapoorb@gmail.com



[Signature]
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Sida cordata assisted bio-inspired silver nanoparticles and its antimicrobial, free-radical scavenging, tyrosinase inhibition, and photocatalytic activity (4 in 1 system)

Brindhamani Ravi, Ganesh Mani, Hemalatha Pushparaj, Hyun Tae Jang & Vijayabaskaran Manickam

To cite this article: Brindhamani Ravi, Ganesh Mani, Hemalatha Pushparaj, Hyun Tae Jang & Vijayabaskaran Manickam (2022): *Sida cordata* assisted bio-inspired silver nanoparticles and its antimicrobial, free-radical scavenging, tyrosinase inhibition, and photocatalytic activity (4 in 1 system), Particulate Science and Technology, DOI: [10.1080/02726351.2022.2129116](https://doi.org/10.1080/02726351.2022.2129116)

To link to this article: <https://doi.org/10.1080/02726351.2022.2129116>



Published online: 17 Oct 2022.



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NAAC 3.3.1 - Paper Publication

Google Scholar - 2022 - 2023

SL.No	Title of paper	Name of the Teacher	Name of journal	Year of Publication	ISSN Number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number	
						Link to website of the Journal	Link to article / paper / abstract of the article
1	EMERGING HELICOBACTER PYLORI RESISTANCE AND ITS ERADICATION	Mr. P. Manivasakam	INTERNATIONAL JOURNAL OF SCIENTIFIC DEVELOPMENT AND RESEARCH (IJS DR)	2023	2455-2631	www.ijsdr.org	https://www.ijsdr.org/viewpaperforall.php?paper=IJS DR2306001




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EMERGING *HELICOBACTER PYLORI* RESISTANCE AND ITS ERADICATION

¹Dr. Guruprakash Raja, ²Manivasakam P, ³Abinaya A, ⁴Padmapooja K V

^{1,3,4}Pharm. D, ²Assistant Professor,
Department of Pharmacy Practice
J.K.K. Nattraja College of Pharmacy
Tamil Nadu, India.

Abstract- *Helicobacter pylori* is a gram-negative bacterium that infects roughly 4.4 billion people globally. Its prevalence varies geographically and is affected by a variety of factors. Various national and international guidelines for the management of *H. pylori* have been regularly updated for eradication. Recent worldwide guidelines for treating *H. Pylori* infections recommend bismuth or non-bismuth triple therapy for 14 days as a first-line treatment for *H. Pylori* in areas of high clarithromycin and/or metronidazole resistance. Antibiotic resistance in *H. pylori* has drastically increased on a global scale, which has an impact on the effectiveness of treatment. Although effective antibiotic therapy must be based on susceptibility testing, increasing antimicrobial resistance and widespread lack of antimicrobial susceptibility have led physicians to mostly depend on empiric regimens. Triple therapy with clarithromycin is no longer the recommended treatment for *H. Pylori* owing to the rising prevalence of antibiotic resistance, especially in some areas where local resistance to this treatment is over 20%. Alternative methods of eradicating *H. Pylori* infection have been proposed. Some of the novel therapeutic agents include vonoprazon, Levofloxacin and probiotic supplements. Although these new therapeutic interventions offer respectable *H. Pylori* eradication rates, they should not make *H. Pylori* more resistant to antimicrobials in the future.

Key words: *H. Pylori*; Resistance; Eradication; Treatment

INTRODUCTION:

More than half of the world's population has the gram-negative bacteria *Helicobacter pylori* (*H. Pylori*) in their gastrointestinal environment.[1] Studies show that the number of people who have *H. Pylori* depends on a number of factors, such as age, geography, place of residence, and socioeconomic status.[2] The primary method of *H. Pylori* transmission appears to be oral-to-oral transfer. Infection by *H. Pylori* is a leading cause of gastritis, gastric and duodenal ulcers, mucosal associated lymphoid tissue, and gastric cancer.[3] Therapy to get rid of *H. Pylori* has been shown to lower the risk of stomach cancer, ease stomach inflammation, and speed up ulcer healing.

The treatment of *H. Pylori* is becoming more difficult owing to rising antibiotic resistance. A proton pump inhibitor (PPI), amoxicillin (AMO), and clarithromycin (CAM) were previously suggested as elements of a 7-day conventional triple therapy for the treatment of *H. Pylori*. [4] Due to the rise in *H. Pylori* antibiotic resistance, the eradication rate that could be accomplished with this regimen has significantly decreased. Also, resistance to fluoroquinolones and metronidazole (MNZ), which are often used as "rescue" treatments,[5] has grown to more than 15% in some parts of the world in recent years. In regions with clarithromycin resistance rates exceeding 15% to 20%, the Maastricht IV/Florence Consensus Report advised discontinuing PPI-clarithromycin-containing triple treatment.[6] Also, bismuth-containing quadruple therapy (BQT) is recommended as a first-line treatment for getting rid of *H. Pylori* in places with high or low clarithromycin resistance because it works well, is safe, and is well tolerated. The World Health Organisation (WHO) has issued its first list of antimicrobial-resistant "priority pathogens," with *H. Pylori* listed as a high priority pathogen. This review summarises the current *H. Pylori* resistance and its various alternative treatment approaches.

Standard *H. Pylori* therapy:

Treatment should be prescribed to all patients who have a positive test for active infection, and the chosen treatment regimen should offer an eradication rate of at least 90%. Triple therapy, sequential therapy, quadruple therapy, and triple therapy based on levofloxacin are various treatment options for eradicating *H. Pylori*. [7] When choosing the best empirical treatment plan for *H. Pylori*, it's important to think about how the patient has been exposed to antibiotics in the past, how antibiotic resistance varies by region, and the rate of eradication. These factors may affect how well the treatment works.

Traditional triple regimen therapy:

The traditional triple therapy for managing *H. Pylori* infections was the gold standard therapy. The proton pump inhibitor, clarithromycin, and amoxicillin or metronidazole are the three key components of the traditional triple treatments. According to a systematic review and meta-analysis of 7722 participants, the optimal triple regimen treatment duration was 14 days. After 14 days, the eradication rate was greater than it was after 7 days (81.9% versus 72.9%). [8] A meta-analysis of 3715 individuals in Turkey revealed that the eradication rate was very low (60%), which may be attributed to the high levels of clarithromycin resistance in the region, regardless of whether the medication continued for 7 days or 14 days. [9] Most countries are currently trying to get rid of *H. Pylori* with a triple treatment based on clarithromycin, but this regimen no longer meets the standards for successful eradication. PPI (PPI/Amoxicillin/Clarithromycin) can only be used as a first-line treatment for *H. Pylori* in areas with low clarithromycin resistance (15-20%), according to international guidelines. [10] According to certain research, the PPI/Amoxicillin/Metronidazole