3.2.1. Ratnam Institute of Pharmacy was established in the year 2007 by a Ratnam educational society, with a vision to give quality education to the poor and rural background people. The college is located in a green plantation non polluted area in Pidathapolur village and Muthukur mandal, SPSR Nellore District. The college campus located close to Nellore city has well connected roads and transportation both public and private. The mangroves and Paddy fields are within and next to college campus. This provides nice and clean environment for students to learn subjects. The college is provided with all the amenities like Vehicle Parking, drinking water, Dining halls and required number of Washrooms for both students and staff.

The Institution offers various pharmacy courses like B.Pharm, Pharm.D, Pharm.D (Post Baccalaureate) and M.Pharm with four specializations like Pharmaceutics, Pharmaceutical Analysis, Pharmacology and Pharmacy Practice.

The college has many cells to monitor and proper functioning of the Academics, Research, Extracurricular and social activities.

1. **R&D Cell:** The research and development cell was established in the year 2015.This cell will monitor the research activities of the graduate, Post graduate and Teachers time to time by conducting periodical review meetings of the academic project work. The cell will also counsel and motivate students and staff about the importance of research work for the educational institution, pharmacy Industry and also their personal career growth. The cell will educate staff and students to publish research and review articles in quality Journals indexed in SCOPUS, UGC CARE and SCI etc. and applying for the funding projects of AICTE, UGC and SERB etc.

2. **Institution Innovation Council:** IICs is a meant for monitoring and promoting Innovative thoughts and Entrepreneurship as regular

practice. This cell was established in the year 2022. This cell will also help to apply for minor funding for research activities.

3. **Entrepreneur development Cell:** The college entrepreneur development cell was established in the year 2022. The students were given different tasks so that they can become not just skilled students but also future entrepreneur with new startup programs etc, so that they can create employment for the skilled and non skilled people. The pharmacy students has huge scope to become an entrepreneur by setting good retail pharmacy out lets, wholesale medical distributors, establishing small scale industry etc.

4. **IQAC:** The Internal Quality assurance Cell (IQAC) plays very important role to ensure quality education as a whole it will enhance the standards of education in education institution. This cell was established in the year 2022.The pivot role of IQAC is to make sure the implementation of decision of the competitive authorities time to time regarding all academic activities, this can be achieved by regular monitoring and their by assure the quality of academic and administrative activities in the institution. The IQAC cell will collect regular feedbacks from the students regarding academics and non academics and analyze the same by respective faculty.

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Volume - 2

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Contents

Chapter - 1

Pyelonephritis

Dr. K. Arun Chand Roby, Dr. C. Madhavi Latha and Dr. M. Sreenivasulu

Abstract

Pyelonephritis is a sudden and severe kidney infection which causes the inflammation of kidneys and may permanently damage them. It may be life threatening. It is a bacterial infection of the kidneys where in most of the cases it can be cured without causing long lasting renal damage. It can be severe and is usually quite painful and few patients need to be hospitalized. In acute pyelonephritis small dot like structures can be found which are called as "ABSCESSES". Complicated pyelonephritis includes pregnant patients, patients with uncontrolled diabetes, kidney transplants, urinary anatomical abnormalities, acute or chronic kidney failure, as well as immunocompromised patients and those with hospital-acquired bacterial infections. It is a Life-threatening kidney disease which destroys the skin muscle tissue leading to the renal infection which is characterized by the production of gas in kidneys.

The goal of treatment is to control the infection and reduce the symptoms usually resolve within 48-72 hours after appropriate treatment.

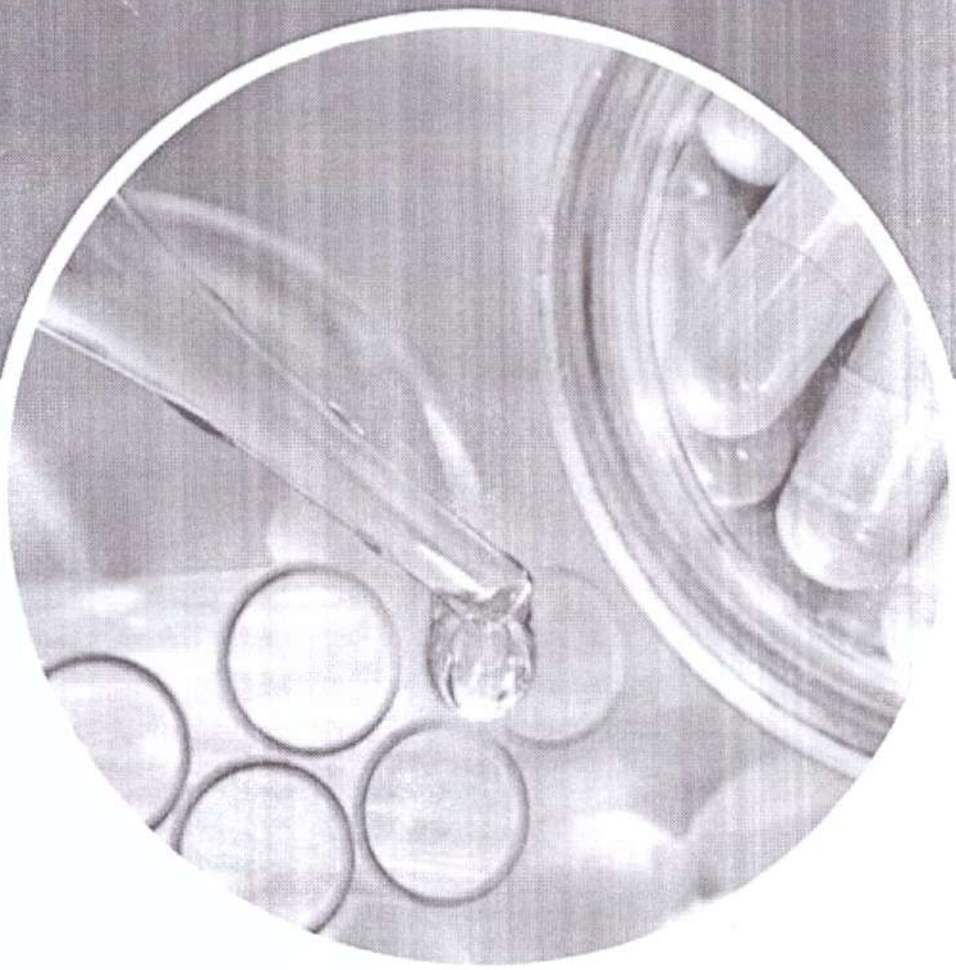
Oral or IV Fluids, antipyretics, pain medications and a dose of parenteral antibiotics are generally referred as the treatment for pyelonephritis.

Antibiotics are the first line therapy for pyelonephritis. The antibiotics are generally given for 14 days but the patients who are receiving Fluoroquinolone and Ciprofloxacin the treatment can be shortened to 7 days.

Although the drugs can cure the infection within 2-3 days nut the medication must be taken for entire 14 days.

Keywords: Pyelonephritis, emphysematous pyelonephritis, xanthogranulomatous granulomatous pyelonephritis, penicillin's, amoxicillin clavulanate potassium, cephalosporin's, trimethoprim sulfamethoxazole

A TEXTBOOK OF PHARMACEUTICAL ANALYSIS



Dr.M.Sreenivasulu, Mrs.Prabhavathi, Mrs.Maneesha, Ms.Ch.Sakhinamma

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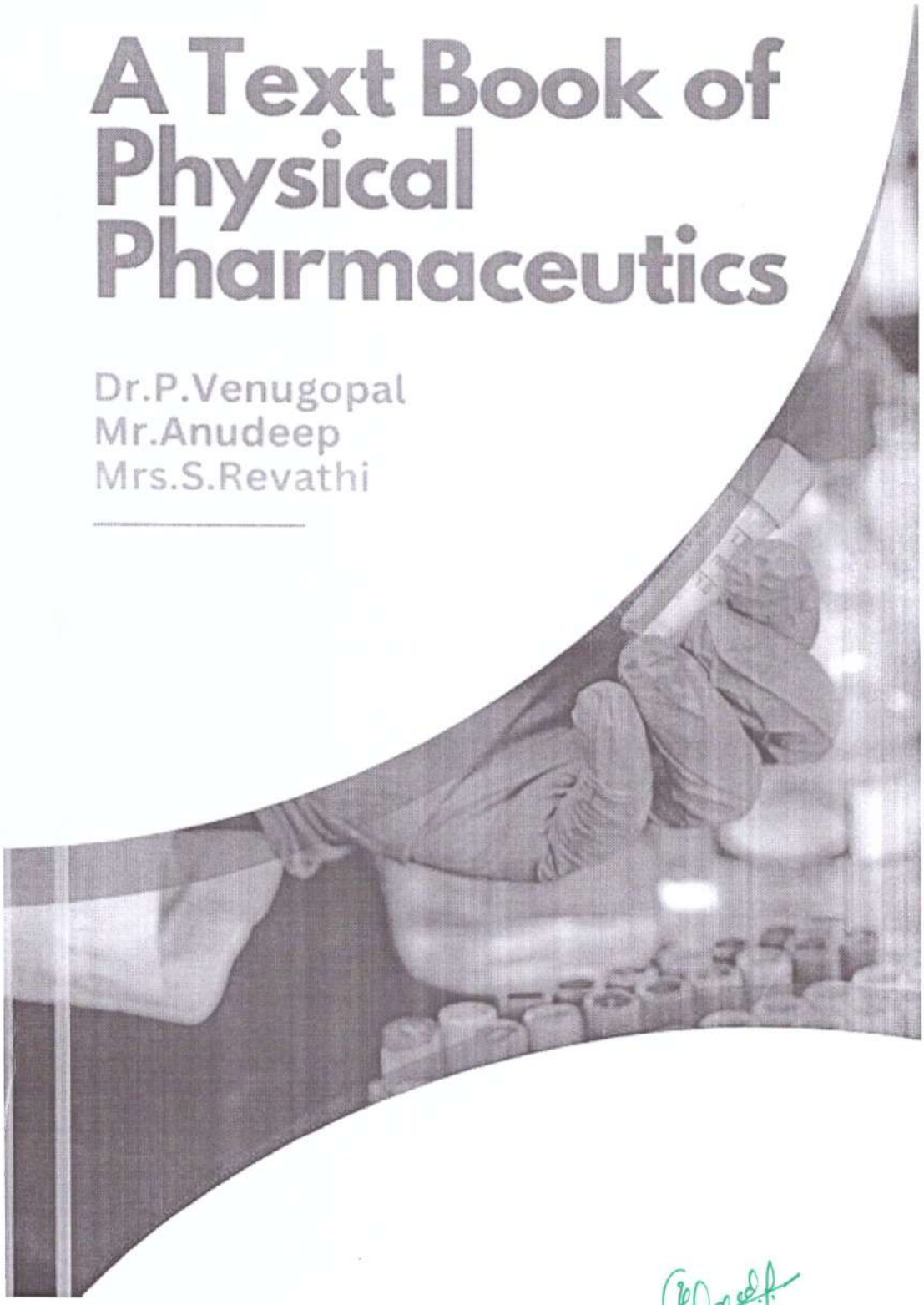
A Text Book of Physical Pharmaceutics

Dr.P.Venugopal
Mr.Anudeep
Mrs.S.Revathi



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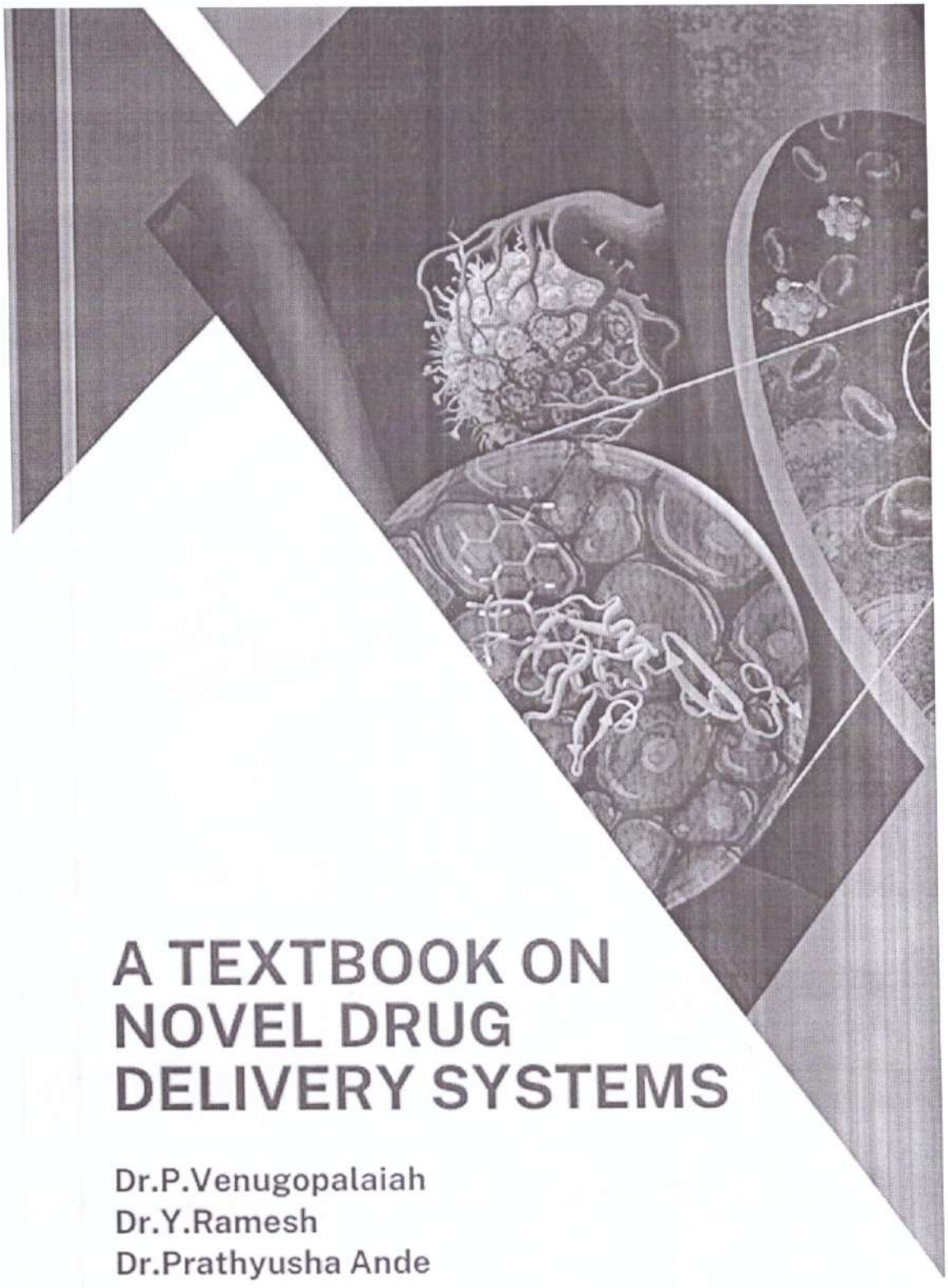

A TEXTBOOK ON NOVEL DRUG DELIVERY SYSTEMS

Dr.P.Venugopalaiah
Dr.Y.Ramesh
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A TEXTBOOK ON NOVEL DRUG DELIVERY SYSTEMS

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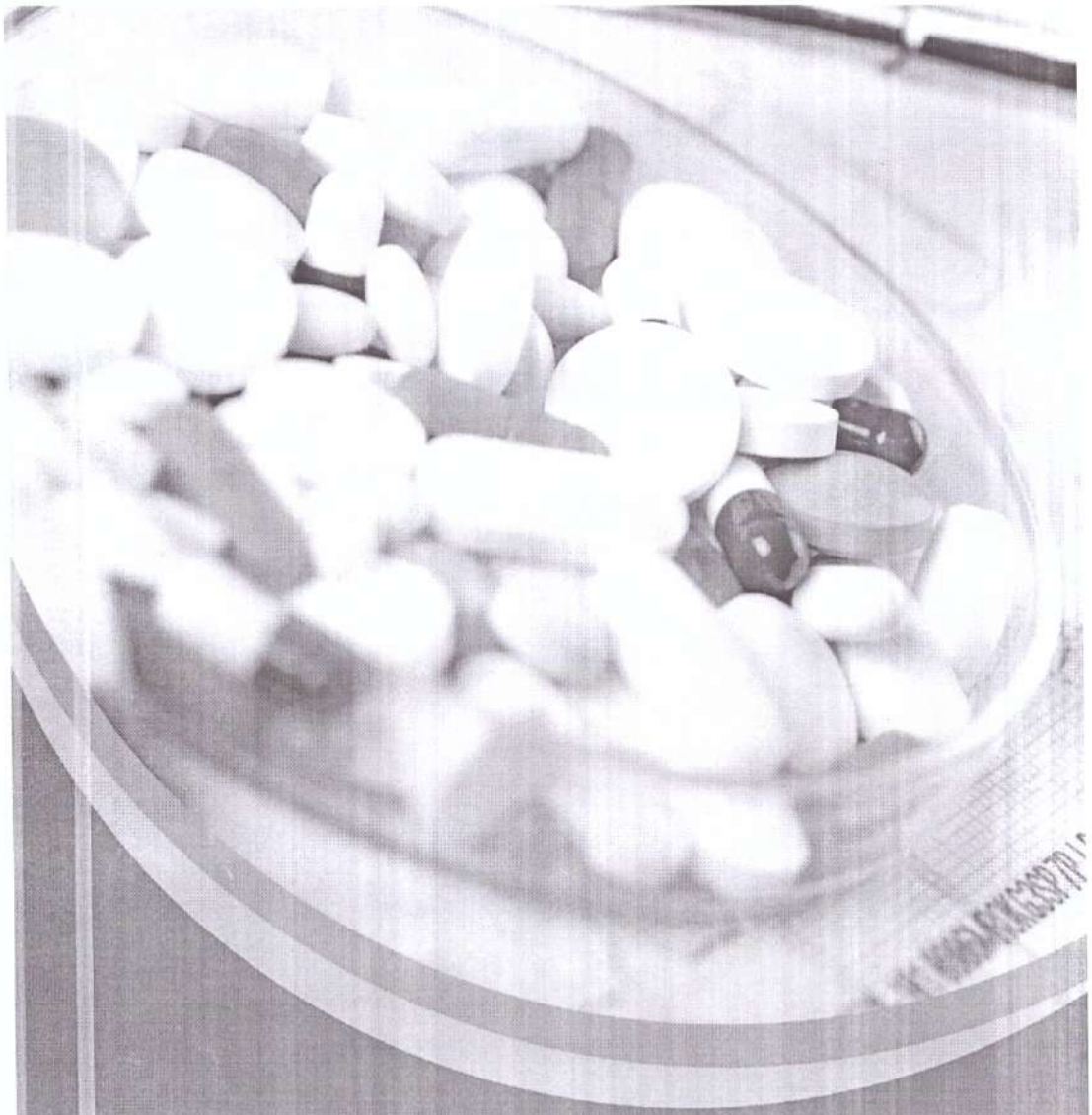

A TEXTBOOK FOR PHARMACOLOGY

Ms.P.Sailaja, Ms.Meharunisa,
Dr.Y.Prapurna Chandra

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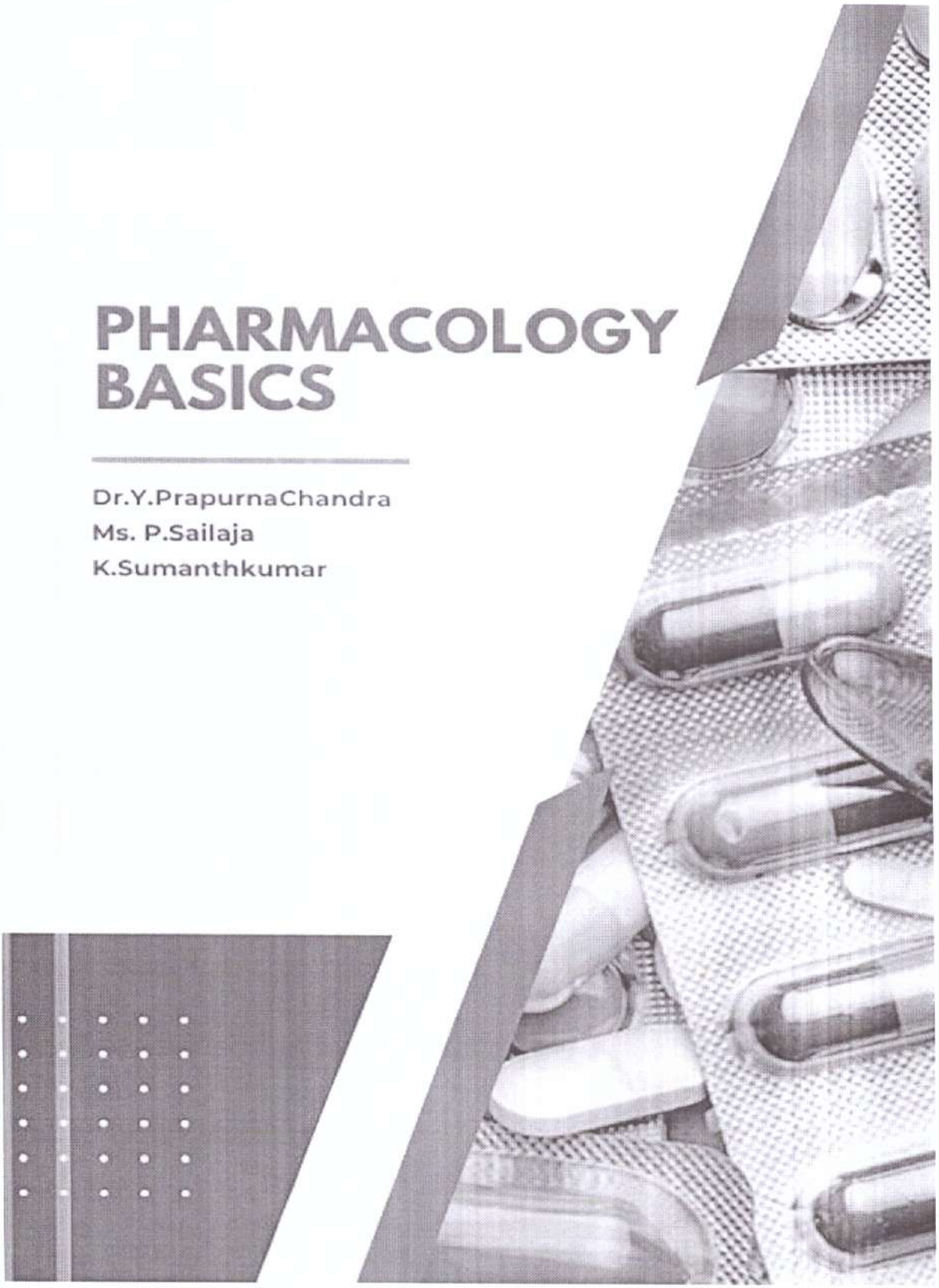
Dr.Y.PrapurnaChandra
Ms. P.Sailaja
K.Sumanthkumar



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PHARMACOLOGY BASICS

List of Seminars/Workshops

A.Y.2022-23

S.No	Name of the Programme	Date	No. of Participants	Details of the Resource Person
1.	A seminar on future trends in entrepreneurship	16.06.2022	59	Mrs. G. Sujatha, M. Pharm Asst. Professor, Dept of pharmaceutical chemistry, Gokula Krishna college of pharmacy, sullurpet. Ph.no: 8985597902 Email: sujipharma58@gmail.com
2.	A seminar on natural products in drug discovery research and development	13.07.2022	61	Mr. K.Sumanth Kumar. M.Pharm, Asst Professor, Dept of Pharmacology, St. Mary's College of Pharmacy, Guntur, Andhra Pradesh, India. Ph.no: 9704902829 Email: Sumanth.rexton@gmail.com
3.	One day seminar on current trends in pharmaceutical research	24.08.2022	60	Mrs. K.N. Maneesha. M.Pharm, Asst Professor, Dept of Pharmaceutical analysis, Samskruthi College of Pharmacy, Hyderabad, Telangana, India. Ph.no: 9515265134 Email: maneesha.pharmacy@gmail.com
4.	One day workshop on entrepreneurship	10.09.2022	52	Dr. C. Madhavi Latha, M. Pharm, PhD Professor, Dept of Pharmacology, Swathi College of Pharmacy, Venkatachalam, Nellore AP, India. Ph.no: 9052987936 Email: madhavilathacology@gmail.com
5.	A seminar on drugs outcome research and policies	11.11.2022	57	Dr. J.SuchitraM. Pharm, Ph.D. Assoc Professor, Dept of Pharmaceutical chemistry, Narayana pharmacy college, AP, India. Ph.no: 9052582816 Email: jajulasuchitra@gmail.com

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6.	One day seminar on opportunities in clinical research industry	05.12.2022	52	Mr.V. Ramanarayana Reddy, M.pharm Associate Professor, Dept of Pharmacy practice, Jagans institute of pharmaceutical sciences, Nellore, AP, India Ph.no: 8317641024 Email: pharmarams@gmail.com
7.	A seminar on entrepreneurship and innovation	27.01.2023	66	Dr. J. Ravi Kumar Reddy, Principal, Dept of pharmaceutics, Mother Theresa institute of pharmaceutical education and research, Kurnool, India. Ph.no: 7483065044 Email: ravikumarreddy.juturi@gmail.com
8.	A Seminar on intellectual property right	25.02.2023	63	Dr. P. Pratyusha ande, Professor, Dept of pharmaceutics, Jagans college of pharmacy, Nellore, India. Ph.no: 9441214158 Email: pharmapratyu@gmail.com
9.	A workshop on good primary practice under pharmaceutical promotion and development on research	16.03.2023	57	Dr. G Rajeswari M.Pharm, Ph.D. Professor,HOD Dept of Pharmacology, SCPER, AP, India. Ph.no: 9676269554 Email:rajeswarim.phharma6@gmail.com

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List of Seminars/Workshops

A.Y.2021-22

S.No	Name of the Programme	Date	No. of Participants	Details of the Resource Person
1.	Workshop on "top of the bench (hands on experience) quiz or puzzle in chemistry and analysis on research"	07.09.2021	59	P. Sivakumar Associate professor Department of ph. Chemistry Gokula krishna college of pharmacy, Sullurpeta. India. Mail. I'd-sivapeta369@gmail.com Ph. No-8500111085
2.	A seminar on development of entrepreneurial skills in pharma field	05.10.2021	62	Mrs. Sk. Salma, Asst. Professor, Dept of pharmaceutical chemistry, Narayana Pharmacy college, Nellore, India. Ph.no: 9581883840 Email: salma.mpharma@gmail.com
3.	A seminar on inspired career in pharmaceutical sciences and research	12.11.2021	61	Mrs. S. Revathi. M. Pharm, Asst. Professor, Dept of Pharmaceutics, Jagans institute of pharmaceutical sciences, Nellore, AP, India Ph.no: 7780760442 Mail id: Revathikondeti@gmail.com
4.	A One day seminar on innovations and entrepreneur outcome-based education	20.12.2021	52	Mr. K. Suresh, Associate professor, Dept of pharmacognosy, Mother Theresa institute of pharmaceutical education and research, Kurnool, India. Ph.no: 9866024211 Email:kasaralasuresh@gmail.com
5.	A seminar on applications of nano technology in drug delivery systems in research development	03-01-2022	56	Mrs. B. Kalyani Associate professor Dept of pharmaceutics Gokula krisna college of pharmacy Mail. I'd-kevinkarunya@gmail.com Ph. No- 8106686200

6.	A one day seminar on recent advances in pharmaceutical research	19.01.2022	52	P. K Devibala Associate professor Department of pharmaceutics Gokula krishna college of pharmacy Mail. I'd-devinov15@gmail.com Ph. No-9177579805
7.	A One day workshop on concepts and applications of molecular modelling in research development	25.02.2022	60	Dr P. Kishore Professor, Department of Pharmacognasy Gokula krishna college of pharmacy Sullurpet. Ph. 9951850662 Mail. Id- kishorepharmcog@gmail.com
8.	One day workshop on instrumental analysis in research methods	14.03.2022	52	Mrs. S. Revathi. M. Pharm, Asst. Professor, Dept of Pharmaceutics, Jagans institute of pharmaceutical sciences, Nellore, AP, India Ph.no: 7780760442 Mail id: Revathikondeti@gmail.com
9.	One day seminar on writing research proposal for funding projects	15.04.2022	52	Dr. M. Sreenivasulu. M. Pharm, PhD Professor, Dept of Pharmaceutical chemistry, Shanthi Ram College of Pharmacy, Nandyala, AP, India. Ph.no: 8074675050 Email: sreenivasulu_munna@yahoo.com
10.	A seminar on prospects and challenges for innovative ideas in intellectual property rights	11.05.2022	61	Mr. M.Raj Kumar, Associate professor, Dept of Pharmaceutics, Mother Theresa institute of pharmaceutical education and research, Kurnool, India. Ph.no: 8121337080 Email:marikantiraj@gmail.com

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List of Seminars/Workshops

A.Y.2020-21

S.No	Name of the Programme	Date	No. of Participants	Details of the Resource Person
1.	A seminar on development of drugs, devices and diagnostics through transitional research	22.10.2020	60	Mrs. S. Revathi. M. Pharm, Asst. Professor, Dept of Pharmaceutics, Jagans institute of pharmaceutical sciences, Nellore, AP, India Ph.no: 7780760442 Mail id: Revathikondeti@gmail.com
2.	A workshop on standard and intellectual issues	13.11.2020	62	Ms. A. Sai Saranya. M.Pharm, Asst. Professor, Dept of Pharmaceutical Analysis, Narayana Pharmacy college, Nellore, India. Ph.no: 9491924958 Email: sai.saranya.741@gmail.com
3.	A seminar on biology and application of stem cells in research development	16.12.2020	53	Mrs.P Kavitha Associate professor, Dept of pharmaceutics, Gokula Krishna college of Pharmacy, sullurpet. Email:kavithapharma147@gmail.com
4.	A seminar on resilience and failure in entrepreneurship	05.01.2021	57	Mrs. E. Manasa, M. Pharm Assoc. Professor, Dept of Pharmacognosy, SIPER, Nellore. Ph.no: 8985588876 Email: manasa.esr@gmail.com
5.	A workshop on HNMR spectroscopy and chiral pharmacology in research	10.02.2021	58	Ms. Sk. Salma sultana, Asst. Professor, Dept of pharmacology, Narayana pharmacy college, Nellore. Ph: 9392226516 Mail id:salmasultanacology@gmail.com
6.	A workshop on regulatory complains for accelerating innovations in research	19.03.2021	61	Mrs. P. Prabhavathi. M.Pharm, Assoc. Professor, Dept of Pharmaceutical Chemistry, Narayana pharmacy college Ph.no: 8897923914 Email: prabhapellakuri@gmail.com

7.	A seminar on importance of pharmaceutical research in health care sector	06.04.2021	62	Dr. P. Pratyusha ande, Professor, Dept of pharmaceutics, MIPER, Kurnool, India. Ph.no: 9441214158 Email: pharmapratyu@gmail.com

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List of Seminars/Workshops

A.Y.2019-20

S.No	Name of the Programme	Date	No. of Participants	Details of the Resource Person
1.	A seminar on intellectual property right in trade and development	06.06.2019	52	Mrs. E. Manasa, M. Pharm Assoc. Professor, Dept of Pharmacognosy, SIPER, Nellore. Ph.no: 8985588876 Email: manasa.esr@gmail.com
2.	A seminar on drug discovery method in research development	19.07.2019	53	Mr. R. Raghuveer, Associate professor, Dept of pharmacology, Mothertheresa institute of pharmaceutical education and research, Kurnool, India. Ph.no: 9441446474 Email:roodda.raghuveer@gmail.com
3.	A seminar on prospects and challenges for clinical research and organisation	20.08.2019	58	Dr. G. Avinash Kumar Professor and HOD, Dept of Pharmacognosy, Rao's college of pharmacy, Nellore. Ph.no: 9148086916 Email:dravinashreddy88@gmail.com
4.	A workshop on preparing research regulatory protocols	18.09.2019	60	Ms. Sk. Salma sultana, Asst. Professor, Dept of pharmacology, Jaganscollege of phamacy, Nellore. Ph: 9392226516 Mail :salmasultanacology@gmail.com
5.	A seminar on vaccines-current and future development drug discovery and research	03.10.2019	52	Mr. P. Venkata AnudeepM.Pharm, Asst. Professor, Dept of Pharmaceutics, Narayana Pharmacy college, Nellore, India. Ph.no: 8143659012 Email: anudeeppadavala9@gmail.com
6.	A seminar on molecular pharmacology and complex mental illness in research development	27.11.2019	51	Ms. A. Sai Saranya. M.Pharm, Asst. Professor, Dept of Pharmaceutical Analysis, Narayana Pharmacy college, Nellore,

				India. Ph.no: 9491924958 Email: sai.saranya.741@gmail.com
7.	A seminar on emerging trends in intellectual property rights	02.12.2019	61	Mrs. K. Sandhya. M.Pharm, Assoc. Professor, Dept of Pharmaceutical Chemistry, SIPER, Nellore Ph.no: 8919364830 Email: sandhyakota1986@gmail.com
8.	A workshop on pharmaceutical quality control and quality assurance in research (QA/QC)	21.01.2020	60	Mrs. SK. Salma. M.Pharm, Asst. Professor, Dept of Pharmaceutical chemistry, Narayana Pharmacy college, Nellore, India. Ph.no: 9581883840 Email: salma.mpharma@gmail.com
9.	A seminar on entrepreneur ecosystem and regional development	06.02.2020	52	Mrs. G. Sujatha, Asst. Professor, Dept of pharmaceutical chemistry, Krishna Teja Pharmacy college, Tirupathi. Ph.no: 8985597902 Email: sujipharma58@gmail.com
10	One day workshop on emerging trends in pharmaceutical sciences and research	05.03.2020	61	Mrs. P. Prabhavathi. M.Pharm, Assoc. Professor, Dept of Pharmaceutical Chemistry, Narayana pharmacy college Ph.no: 8897923914 Email: prabhapellakuri@gmail.com

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List of Seminars/Workshops

A.Y.2018-19

S.No	Name of the Programme	Date	No. of Participants	Details of the Resource Person
1.	A seminar on technology impact on entrepreneurship	12.07.2018	52	Dr. M. Sreenivasulu. M. Pharm, PhD Professor, Dept of Pharmaceutical chemistry, Shanthi Ram College of Pharmacy, Nandyala, AP, India. Ph.no: 8074675050 Email: sreenivasulu_munna@yahoo.com
2.	A one-day workshop on sampling techniques in drug analysis and research.	23.08.2018	60	Mr. P. Venkata AnudeepM.Pharm, Asst. Professor, Dept of Pharmaceutics, Narayana Pharmacy college, Nellore, India. Ph.no: 8143659012 Email: anudeeppadavala9@gmail.com
3.	A seminar on research and development in pharmacy	11.09.2018	55	Mrs. E. Manasa, M. Pharm Assoc. Professor, Dept of Pharmacognosy, SIPER, Nellore. Ph.no: 8985588876 Email: manasa.esr@gmail.com
4.	A seminar on building awareness on intellectual property rights	29.11.2018	52	Dr. Saran Kumar Pharm.D. Assoc Professor, Dept of Pharmacy Practice, Jagans pharmacy college, AP, India. Ph.no: 9866926292 Email: saranpharmd@gmail.com
5.	A workshop on applications of NMR in pharmaceutical analysis and research	13.12.2018	55	Mrs. P. Prabhavathi. M.Pharm, Assoc. Professor, Dept of Pharmaceutical Chemistry, Narayana pharmacy college Ph.no: 8897923914 Email: prabhapellakuri@gmail.com
6.	A seminar on fluorinated chemicals in medicinal chemistry and drug development of research	24.01.2019	52	Mrs. K. Sandhya. M.Pharm, Assoc. Professor, Dept of Pharmaceutical Chemistry, SIPER, Nellore Ph.no: 8919364830 Email: sandhyakota1986@gmail.com

7.	A seminar on psychology and successful entrepreneurs	27.02.2019	57	Ms. Sk. Salma sultana, Asst. Professor, Dept of pharmacology, Jagans college of phamacy , Nellore. Ph: 9392226516 Mailid:salmasultanacology@gmail.com
8.	A seminar on drug development and research for CNS disorders	05.03.2019	52	Mrs. N. Ramya, Assoc. Professor, Dept of pharmacology, Vagdevi college of pharmaceutical sciences and research Centre, Nellore. Ph: 8374263902 Mail id: ramyanagasuri@gmail.com
9.	A seminar on drug discovery for target identifications in research development	06.05.2019	55	Mrs. Sk. Salma, Asst. Professor, Dept of pharmaceutical chemistry, Narayana Pharmacy college, Nellore, India. Ph.no: 9581883840 Email: salma.mpharma@gmail.com

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(22) Date of filing of Application :13/03/2021

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(43) Publication Date : 19/03/2021

(54) Title of the invention : ARTIFICIAL INTELLIGENCE BASED SMART TOUCHLESS MEDICINE DISPENSING SYSTEM

(51) International classification	:G07F0017000000, G06Q0050220000, G16H0020130000, A61J0007000000, G16H0020100000
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(57) Abstract :
In this pandemic era, technology dependent solutions are demanded for preventing the spread of contagious disease COVID-19 as the medical officers have themselves become victim to the disease while treating the patients. Eventually, the patients has to be cured which is possible by providing timely medication. This invention proposes an autonomous touchless medicine dispensing system for providing service to victims in the hospital ward based on Artificial Intelligence algorithm. Lack of experienced medical officers, also leads to huge death of human life. The proposed system is an innovative robotic mobile system able to provide timely medication to save human life to greater extent without the issue of pandemic spread. 3D modeling of the system is done using Pro- Engineer software. The system is able to detect specific patient using infrared technique which scans the unique digital code allocated for the patient bed. Dispensing of the medicine is done based on infrared counter where the medicines are dispensed based on doctor™s prescription. Medicines are dispensed touchless in disposable containers to every patient autonomously at their ward itself. This system is efficient in providing immediate medication without any considerable delay to the victims without human intervention.

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(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The present invention relates to preparation of herbal formulation, for treating obesity. The present disclosure relates to a herbal formulation to control and manage obesity comprising an effective amount of commonly used herbs such as Garcinia cambogia Black Cumin seeds, Ginger, Garlic, Bamboosa and Apple cider vinegar. Further the disclosure provides a process of preparing said herbal formulation for use in oral dosage forms, in particularly the herbal formulation was formulated into tablets. Results showed that the prepared herbal tablets found to have a significant benefit in weight reduction with long term safety.

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patent

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(57) Abstract :

Acute Kidney Injury in patients increase long term adverse events such as morbidity finally mortality hence early detection of acute kidney injury is necessary for improved functioning of renal organ with decreased comorbidities thereby increasing rate of survival of patients. Kidney injury can be controlled by reducing the risk factors such as interaction between drug drug and disease-drug interaction. Complexities raises due to drug-drug interaction and disease-drug cannot be handled by typical statistical approaches. In this invention, novel deep learning algorithm is proposed for discovering rules from tree models of multilayer based on drug usage combinations which detects indications of disease based on drug interaction. It is found that usage of drugs for several diseases have significant impact leading to occurrence of kidney injury. The proposed Deep learning tree based model performs better with higher prediction accuracy and interpretability than conventional tree based model.

No. of Pages : 11 No. of Claims : 6

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(54) Title of the invention : POLYHERBAL FORMULATION FOR DIABETES MELLITUS

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(57) Abstract :

The present invention relates to a polyherbal formulation for the treatment of diabetes mellitus. The formulation comprises a specific combination of natural plant extracts, including Bitter Melon (Momordica charantia), Gymnema Sylvestre, Cinnamon (Cinnamomum verum), Fenugreek (Trigonella foenum-graecum), Ginseng (Panax ginseng), Indian Gooseberry (Emblica officinalis), Turmeric (Curcuma longa), Ginger (Zingiber officinale), Holy Basil (Ocimum sanctum), and Neem (Azadirachta indica). The polyherbal formulation exhibits potent anti-diabetic properties through various mechanisms, including insulin secretion enhancement, glucose uptake facilitation, and regulation of carbohydrate metabolism.

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History of Medicine Studies

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A two-dimensional quantitative structure-activity relationship investigation on 3-thiocyanato-1H-indoles as possible anticancer agents

V.Haribaskar, M.Gobinath , D.Ramesh & A.Ramesh

Abstract

We conducted two-dimensional quantitative structure activity relationship (2D QSAR) research on a new series of 3-thiocyanato-1H-indoles in an effort to identify powerful anti-cancer drugs. variety of 3-thiocyanato-1H-indoles were subjected to 2D-QSAR using Vlife MDS 4.3.The k-nearest neighbors (kNN) approach, used to Vlife molecular design suites (MDS), yielded a statistically verified two-dimensional quantitative structure activity relationship model. Cytotoxicity activity against the HL60 human cancer cell line was associated with Model 3 statistical data (q2 = 0.8001, pred r2 = 0.4082). The LOO approach was used for validation.Final Thoughts: The model now includes three attributes that positively correlate with the cytotoxicity activity. There is hope that novel, more effective anticancer drugs could be developed using this proven 2D QSAR model.

Keywords: 2-dimensional quantum search for anticancer drugs using regression analysis; 3-thiocyanato-1H-indoles; HL60 cell line.

Introduction

The unique capacity of the compounds produced by heterocyclic chemistry to bind reversibly to proteins and imitate the structure of peptides makes it a very useful source of new molecules with various biological functions.(1) to four (3) Indole, also known as benzopyrrole, is a heterocyclic compound with one nitrogen atom (N) substituted for one carbon atom in the ring. As a privileged structure that binds to several receptors with high affinity, the indole moiety is widespread and ranks among the most prevalent hetrocycles among physiologically active natural compounds, medicines, and agrochemicals (5). The therapeutic implications of Indole have been highlighted in published publications as follows: anti-viral, anti-depressant, anti-hyperlipidemic, anti-inflammatory, anti-psychotic, anti-microbial, anti-oxidants, anti-HIV, immunomodulator, anti-leukemia, (19).(21-22) Natural substances with strong pharmacodynamic Indole nucleus activity include reserpine, bufotenine, tryptophan, serotonin, vinblastine, vincristine, tryptamine derivatives, and others. As the second-biggest killer of humans, cancer poses a serious danger to human health.chapters 29–32) The World Health Organization (WHO) projects that 12 million people will lose their lives to cancer by the year 2030.(33) radiation and chemotherapy are two of the current cancer therapies, however the most remarkable pharmaceutical approach to cancer would still be a combination of radiation and significant surgery.

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XDR Monitoring at a University Medical Center: An Intermittent Observational Study

M.Chandana, P.Sindhu, S.Divya & V.Sireesha

ABSTRACT

Background: In order to analyze the rising trend of XDR colonized/infected individuals from both the community and hospital settings, the research zeroed in on patients with XDR organisms and risk factors. The research used a tertiary care hospital's periodic observational study as its methodology. Previous hospital-identified changes in antibiotic resistance patterns informed the periodic duration selection. December 2018–January 2019 and May 2019–June 2019 and November 2019–December 2020 were the selected time periods. Even though it was a prospective research, in order to get the data, there was no sampling or experimentation. The patient's medical record and the microbiology lab provided all the necessary facts. The results show that, out of the entire culture material, 5-6% were XDR isolates. Among the organisms we examined, Klebsiella accounted for 70%. As time went on, the number of infected patients increased, although colonization was initially greatest. Prolonged exposure to antibiotics (>50%), prior hospitalization (>40%), catheter (70%), and advanced age (mean age-58.2 years) were the most significant risk variables acknowledged. The average length of stay in the hospital was three times longer than that of a typical hospital stay. Despite several prospective studies looking at the link between antibiotic exposure details and resistance development, it has proven difficult to isolate specific parameters relating to previous antibiotic exposure and resistance.

Key words: antibiotic resistance, XDR, infection, colonization.

INTRODUCTION/ BACKGROUND

There has been a concerted attempt to reduce the prevalence of antibiotic resistance, which is a major public health concern on a global scale. The CDC first advocated for antibiotic stewardship programs in 2014, which aim to optimize antibiotic usage via coordinated evidence-based initiatives.1Hospitals have been required by the Joint Commission to establish antibiotic stewardship programs since 2017, and global leaders committed to fight the development of resistance at the 71st UN General Assembly in 2016. But thus far, stewardship initiatives have mostly targeted medical professionals and drugstores.Antibiotic resistance mechanisms are being acquired by multidrug-resistant organisms and their increasing circulation inside the hospital, according to the research results of Giancarlo et al. (2018).2Clinicians and epidemiologists still face challenges in managing and regulating measures based on the amount of drug resistance to antibiotics, which is determined experimentally and regularly via the analysis of isolate antibiograms.3 A major public health problem, especially in healthcare facilities, is the exponential growth of bacteria and other microorganisms that are resistant to antibiotics, which has been linked to the ever-increasing usage of these drugs. It seems that antibiotic-resistant organisms are

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Highly Accurate and Reliable RP-HPLC Approach for the Measurement of Valethamate Bromide in Pharmaceutical Compounds

V.Haribaskar, M.Gobinath, B.Prathap & D.Ramesh

ABSTRACT

The developed and confirmed RP-HPLC technique for the measurement of Valethamate bromide in pharmaceutical formulation is presented in this paper. The method is simple, reliable, sensitive, and robust. The mobile phase was composed of acetonitrile and water in a ratio of 20:80 % v/v. The chromatographic system included LC 2010cHT, Luna HPLC analytical C18 100 A°, 250 X 4.6 mm, 5 µm columns. At 200 nm, a PDA detector was used for detection. The half-life of valethamate bromide was 4.62 minutes. In the 5-30 µg/ml range, the method demonstrates a linear response (r2=0.9975).LOQ was 0.68 µg/ml and LOD was 0.22 µg/ml. Following the requirements laid forth by ICH Q2 (R1), the method was verified. Linearity, precision, specificity, accuracy, and robustness were the parameters that were validated. There was less than a 2% RSD for all of the metrics. The method's accuracy ranged from 99.67 to 100.66% after the typical addition of the medication. A research was conducted to assess robustness using a 23-1 factorial design. The described approach may be used to determine the concentration of Valethamate bromide in pharmaceutical formulations.

Keywords: *Factorial Design; Validation; RP-HPLC; ICH guideline; Valethamate bromide (VLB)*

INTRODUCTION

N, N-Diethyl-N-methyl-2-(3-methyl-I-oxo-2-phenylpenty1) oxyl ethanaminium bromide is the chemical name for valethamate bromide (VLB) (Fig.1).An antispasmodic medication called 1-3 VLB is used to induce labor.4 Valethamate bromide in medicinal dose form has only been documented to be estimated using the HPTLC5 technique in the literature. This research used a complete factorial design to conduct a robustness analysis and validate the established technique according to the ICH Q2(R1) guideline6, and it used RP-HPLC as an alternate analytical approach for estimating valethamate bromide in both bulk and pharmaceutical dose form.

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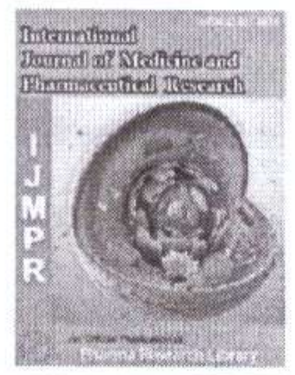

RESEARCH ARTICLE

Evaluation of Phytochemical screening and in vitro Anti-inflammatory activity of Ethanolic extract *of Jatrophagossypifolia Linn.*

P. Sailaja*, SK. Fariya, G. Maruthi Vyshnavi, K. Nikitha, T. Sireesha, K. Swetha

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ABSTRACT

The present study was aimed to evaluate the phytochemical screening and in-vitro anti- inflammatory activity of ethanolic extract *of Jatrophagossypifolia Linn.* It reveals the presence of considerable amount of alkaloid, steroid, phenolic substances and vitamin C (Ascorbic acid), moderately saponins and carbohydrates, trace amount of glycoside and resins were explored from the phytochemical screening. The investigation is based on the need for newer anti-inflammatory agents from natural source with potent activity and lesser side effects as substitutes for chemical therapeutics. Realizing the fact this study was carried out to evaluate the in vitro anti-inflammatory activity of ethanolic extract of *J. gossypifolia*. Results of the study is obtained that the ethanolic extract of *J. gossypifolia* was exhibited membrane stabilization effect by inhibiting hypotonicity induced lysis of erythrocyte membrane in concentration dependent manner It is due to the presence of active principles such as flavonoids and tritrepenoids may responsible for this activity. Hence, *J. gossypifolia* can be used as a potent anti-inflammatory agent.

Keywords:*Jatrophagossypifolia Linn,* Anti-inflammatory activity, Phytochemical Screening, Ethanolic extract, Hypotonicity

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CONTENTS

1. Introduction

Inflammation is a response of a tissue to injury, often injury caused by invading pathogens. It is part of the complex biological response of vascular tissues to harmful stimuli, such as pathogens, damaged cells, or irritants. Inflammation is a protective attempt by the organism to remove the injurious stimuli and to initiate the healing process. Inflammation is not a synonym for infection, even in cases where inflammation is caused by infection. Although infection is caused by a microorganism, inflammation is

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DESIGN & DEVELOPMENT OF FAST DISSOLVING ORAL FILMS OF KETOPROFEN

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ABSTRACT

Fast dissolving oral films can be defined as a dosage form, which when placed in the oral cavity it will rapidly disintegrate and dissolves to release the medication for oral mucosal absorption. Ketoprofen is Non-steroidal Anti-inflammatory agent and Analgesic properties and can be used in low dose as analgesic and anti-inflammatory agent in Rheumatoid Arthritis. This study aims to formulate Ketoprofen as oral dissolving film, to improve the effective relief of pain with severe Rheumatoid Arthritis with little or no adverse effects. In this study 8 formulations were prepared with natural and synthetic film formers using solvent casting method and the effect of different formulation variables on the physical and mechanical properties of the prepared films, besides to the drug release behavior was evaluated. It was found that, the prepared oral film of Ketoprofen that contains Pectin showed the fastest disintegration time (19sec) among the other investigated polymers. The drug release rates were also observed, F3 formulation showed (Pectin) 97.30% drug release within 4 minutes with satisfactory mechanical properties. The overall results suggested that the prepared Ketoprofen fast dissolving oral films can be used as an attractive and alternative to the commercial available immediate release and conventional tablets resulting improved patient adherence.

KEY WORDS: Fast dissolving oral films, Ketoprofen, Rheumatoid Arthritis, Non-steroidal Anti-inflammatory agent, solvent casting method.

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Journal of Drug Delivery and Therapeutics

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Open Access Research Article

Formulation and evaluation of oxymetazoline hydrochloride nasal gels

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ABSTRACT

The main intend of the implement sniff out formulate and evaluate oxymetazoline nasal gels. To achieve more persistent blood levels with decrease dosage of medicine by extended drug evidence and by passing hepatic initially cross metabolism and body including inferable disgrace. The FTIR & DSC spectra there is not any discrepancein the seam clean medicine, polymers & lipids. The Carbopol consisting of reinforce precail eventual scintillating moreover transparent Poloxamer, Hydroxy Propyl Methyl cellulose gels crop up prospective lucent as a consequence frosted slimy. The pH value of all developed formulations of gels (ONGF1-ONGF8) was in the range of 6.2 to 6.9. Spreadability of gels was in the range 19.51 - 33.91 g.cm/sec, The Viscosity of various formulated gels was found in range of 8628 to 9622 centipoises. The percentage drug content of all prepared gel formulations were found to be in the range of 78.53 to 98.56 %. The gel strength of all prepared formulations of gels was found to be in the range of 69 to 96 %. In-vitro diffusion drug release of Oxymetazoline Hydrochloride of nasal gels ONGF1 shows the 95% drug release. The release order kinetics shows all the formulations ONGF1 to ONGF8 formulations were followed Korsemeyer-Peppas with correlation coefficient R^2=0.8969 & 0.2692 respectively. ONGF1 formulation follows both Zero order and Korsmeyer-Peppas models, it indicates diffusion release mechanism followed by non-fickian transport.

Keywords: Nasal, Gels, Oxymetazoline, *In-vitro* diffusion, Carbopol.

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INTRODUCTION

Oxymetazoline hydrochloride (6-tert-Butyl-3-(4,5-dihydro-1H-imidazol-2-ylmethyl)-2,4-dimethylphenol hydrochloride) is an imidazoline derivative sympathomimetic amine. Oxymetazoline is a vasoconstrictor that acts directly on nasal membranes and has been available as a over the counter intranasal drug in the United States for more than 40 years [1]. It is approved for the relief of nasal congestion as a result of common colds and allergic rhinitis. The main aim of the present work is to formulate and evaluate oxymetazoline nasal gels. To achieve more constant blood levels with lower dosage of drugs by continuous drug input and by passing hepatic first pass metabolism and consequent degradation [2]. To reduce the frequency of dose dumping and increase the residence time. The intranasal administration of drugs has long been used for the treatment of rhinitis and nasal congestion. Intranasal administration can overcome the side effects that happen in the gastrointestinal tract and the hepatic first-pass effect [3]. Furthermore, drugs are absorbed better, because of the abundant blood and lymphatic capillaries under the nasal mucosa. Since these properties, intranasal administration can effectively enhance the bioavailability of drugs. Intranasal administration has been stated to reach comparable blood concentrations as intravenous administration [4]. Most of the commercially available nasal preparations are now sprays. The scavenging effect of nasal cilia leads to a very short drug residence time on the human nasal mucosal surface (only 15–30 min), which affects the clinical efficacy to some extent. The term gel represents a physical state with properties intermediate between those of solid and liquids. However, it is often wrongly used to describe any fluid system that exhibits some degree of rigidity [5]. Nasal drug delivery also provides a way to the brain that circumvents the blood-brain barrier because the olfactory receptor cells are in contact with central nervous system directly. The first step involved is absorption of drug in the nasal cavity is crossing the mucus membrane. Because small, uncharged particles can pass through the mucus easily. But charged large molecule does not easily passes through the mucus membrane. Mucin is the protein present in the mucus layer, which binds with the solutes that delays the diffusion and structural changes in the mucus layer also possible because of environmental changes [6].

Therapeutic Advances in Endocrinology and Metabolism

Review

Drug interactions of meglitinide antidiabetics involving CYP enzymes and OATP1B1 transporter

Naina Mohamed Pakkir Maideen, Gobinath Manavalan and Kumar Balasubramanian

Ther Adv Endocrinol Metab

2018, Vol. 9(8) 259–268

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Abstract: Meglitinides such as repaglinide and nateglinide are useful to treat type 2 diabetes patients who follow a flexible lifestyle. They are short-acting insulin secretagogues and are associated with less risk of hypoglycemia, weight gain and chronic hyperinsulinemia compared with sulfonylureas. Meglitinides are the substrates of cytochrome P450 (CYP) enzymes and organic anion transporting polypeptide 1B1 (OATP1B1 transporter) and the coadministration of the drugs affecting them will result in pharmacokinetic drug interactions. This article focuses on the drug interactions of meglitinides involving CYP enzymes and OATP1B1 transporter. To prevent the risk of hypoglycemic episodes, prescribers and pharmacists must be aware of the adverse drug interactions of meglitinides.

Keywords: drug interactions, CYP2C8, CYP2C9, CYP3A4, nateglinide, OATP1B1 transporter, repaglinide

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Introduction

Drug interaction is defined as the interference of effects of one drug by the coadministered drugs, nutrients (food), herbs, alcohol or tobacco smoke.[1] The drug interaction results in either increased or decreased beneficial effects or increased adverse effects. The drug interaction leading to undesirable effects, is termed 'adverse drug interaction'. Polypharmacy, having liver or kidney disease, or a number of underlying chronic disorders elevate the risk of adverse drug interactions.[2]

Interacting drugs can alter the pharmacokinetic or pharmacodynamic profile of another. Plasma concentration of one drug is either increased or decreased by altering absorption, distribution, metabolism, or excretion of another drug, and this type of interaction is known as pharmacokinetic drug interactions. The pharmacodynamic interactions are those in which the effect of one drug is altered by the presence of another drug at the same receptor or molecular site.[3–5] Object drug is the one affected by the interaction, and the drug causing the interaction is termed precipitant drug. The absorption, distribution, metabolism, excretion, or actual clinical effect of the object drug is usually modified by the precipitant drug.[6]

The risk of adverse drug interactions is higher in diabetes patients, as they coadminister the medications to manage their comorbidities such as dyslipidemia, hypertension, heart disease, depression, infections, etc., along with their antidiabetic medications. A Brazil study comprised 140 diabetes patients who attended a tertiary care outpatient center, indicated a prevalence of 75% of potential drug–drug interactions, of which 20.7% were major interactions.[7] And a study from Croatia identified that 80.9% of diabetes patients had at least one potential drug interaction requiring monitoring of therapy.[8] Most of the antidiabetic drug interactions may result in hypoglycemia-related complications. Severe hypoglycemia is a life-threatening emergency and can result in seizures, coma and death.[9,10]

Meglitinides are short-acting insulin secretagogues and they include repaglinide and nateglinide. Repaglinide is a benzoic acid derivative and nateglinide a d-phenylalanine derivative. They are

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Potential action of *Rumex vesicarius* (L.) against potassium dichromate and gentamicin induced nephrotoxicity in experimental rats

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Abstract: To determine the ameliorative potential of the active fraction from different extracts of *Rumex vesicarius* against potassium dichromate and gentamicin induced nephrotoxicity in experimental rats and its possible mechanism of action. Both sex wistar rats were divided into 6 groups (n=6/group) were fed with a control, potassium dichromate and gentamicin supplemented with different extracts at the doses of 200 and 400mg/kg respectively. Oral administration of EERV offered a significant ($p<0.01$ and $p<0.001$) dose dependent protection against PD and GN induced nephrotoxicity. Potassium dichromate and gentamicin nephrotoxicity assessed in terms of body weight, kidney weight, creatinine, urea, uric acid, BUN, albumin and total protein. Thus the present study revealed that EERV phytochemical constituents play an important role in protection against kidney damage.

Keywords: *Rumex vesicarius,* potassium dichromate, gentamicin, serum markers, nephrotoxicity, kidney protection.

INTRODUCTION

Kidney is a major target indispensable excretory organ for exogenous toxicants (Sun and Aree, 2012; Li and Douglas, 2013; Margaret and Stephen, 2012), foreign chemicals, detoxification (Swaran and Vidhu, 2010; Margaret, 2013) and elimination of endogenous waste metabolites. Like liver, the renal system also faces high risk of toxicity (Natasha and Kymberly, 2010; Bruna *et al*., 2012). Disclosure to drugs and chemical reagents like ethylene glycol (Tarek *et al*., 2013), carbon tetra chloride (Lamiaa, 2014), potassium dichromate (Mahmoud, 2013; José *et al*., 2013), sodium oxalate (Robert *et al*., 2014) and heavy metals such as cadmium, mercury, lead and arsenic also persuades nephrotoxicity leads to acute kidney injury (Hong and Yan, 2015; José *et al*., 2013). Most scientists delineate AKI as an unexpected decline in glomerular filtration rate (GFR) reflected by the doublings of serum creatinine and azotemia (David *et al*., 2012; Robert and Mark, 2011). The underlying pathogenesis of kidney damage involves down regulation of endothelial nitric oxide synthase (eNOS) and upregulation of inflammatory mediators in kidney tubular cells that result in high intracellular concentrations (Kashihara *et al*., 2010; Yashpal *et al*., 2011). The parent chemical or a metabolite initiates toxicity through its covalent or non covalent binding to cellular macromolecules or through their ability to produce reactive oxygen species (Yeong-Chul *et al*., 2014; Sabry, 2010). Furthermore, cell injury was occurred by changes in the activity of the macromolecule (Lobo *et al*., 2010). For instance, mitochondrion, lysosome, plasma membrane of proteins, lipids, cytosol and nucleus all are the objects of toxicants (Dean *et al*., 2010). The toxicant cause oxidative stress in both lipid per oxidation and protein oxidation has been shown to contribute to cell injury (Kanti and Syed, 2010). Predisposing factors such as age, pharmacokinetics, underlying disease, dose of the toxic substance, concomitant medication determine and influence the severity of nephrotoxic insult (David *et al*., 2012).

Rumex vesicarius (L.) is a valuable potent medicinal herb, which belongs to family Polygonaceae, commonly known as "Bladder dock or Chukkakura or Khatta palak". Leaves are rich in ascorbic acid, tartaric acids and citric acid (Ashok *et al*., 2013). The aerial parts of this plant and other species of rumex also contain anthraquinone derivatives and flavonoids like emodin, chrysophanol, chrysophanic acid, physcion, isovitexin, isoorientin, quercetin, kaempferol and luteolin glucosides have been detected (Zahed *et al*., 2012). A literature review discloses antibacterial (Tajdar *et al.,* 2014, antioxidant effect (Tajdar *et al.,* 2014), anti-hyperglycemic activity (Ashok *et al*., 2013), diuretic effect (Tajdar *et al.,* 2014), antimicrobial activity (Raid *et al*., 2014), antipyretic, anti emetic, spasmogenic and spasmolytic activity (Khalid *et al*., 2014). The high levels of phenolic compounds, omega 3-fatty acids are isolated and exhibited influential antioxidant activities (Sinéad *et al*., 2011; Mohammad, 2011). In vitro and in vivo study reported *R. vesicarius* against cytotoxicity, protection of kidney and liver (Asha *et al*., 2015). Therefore, the present study was designed to assure nephroprotective effect of phytochemical constituents of *R. vesicarius*. Hence, the attempt is made for the evaluation of different extracts of *Rumex vesicarius* in chemical induced kidney damage in rats.

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ORIGINAL ARTICLE

Stability Indicating Reversed-phase High-Performance Liquid Chromatography Method Development and Validation for Simultaneous Estimation of Bismuth Subcitrate, Tetracycline, and Metronidazole in Bulk and Capsule Dosage Form

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Abstract

Aim: The aim of the study was to develop a new, simple, sensitive, precise, accurate, and stability indicating reversed-phase high-performance liquid chromatography (RP-HPLC) method for the simultaneous estimation of bismuth subcitrate, tetracycline, and metronidazole in the combined capsule dosage form. **Materials and Methods:** The analysis with Inertsil C_{18} (250 × 4.6 mm, 5 µ) column under ambient temperature and using mobile phase phosphate buffer pH = 3.5 and methanol in the ratio of 40:60 v/v. **Results and Discussion:** The retention time of metronidazole, tetracycline, and bismuth subcitrate was found to be 2.599 min, 3.805 min, and 4.661 min, respectively. The proposed method was validated according to the ICH guidelines. The linearity study of metronidazole, tetracycline, and bismuth subcitrate was found to be 125–625 µg/ml, 125–625 µg/ml, and 140–700 µg/ml and correlation coefficient (r^2) was found to be 0.9994, 0.9993, and 0.9993, respectively. The percentage recovery was obtained as 99.95%, 99.86%, and 100.27% metronidazole, tetracycline, and bismuth subcitrate, respectively. The studies were carried out by conducting deliberate degradation of the sample with exposure to stress conditions such as acidic, alkaline, thermal, oxidizing agent, and light. **Conclusion:** This method was validated and meets the regulatory requirements for specificity, linearity, limit of detection, limit of quantification, precision, accuracy and stability for the determination of metronidazole, tetracycline, and bismuth subcitrate in bulk and capsule dosage form by RP-HPLC.

Key words: Metronidazole, Tetracycline, Bismuth subcitrate, Simultaneous Estimation Reversed-phase High-Performance Liquid Chromatography

INTRODUCTION

Bismuth subcitrate is chemically bismuth (3+) pentapotassium bis(2-oxidopropane-1,2,3-tricarboxylate) [Figure 1]. A bismuth compound used for peptic ulcer and gastro-oesophageal reflux disease (GORD).[1] Colloidal bismuth subcitrate is very effective in the treatment of gastroduodenal disorders and appears to act through several mechanisms. It has a little acid-neutralizing effect and does not affect acid secretion. It is uncertain whether it affects pepsin secretion, but it does inhibit peptic activity. It causes an increase in mucus glycoprotein secretion and may also bind to the gastric mucus layer to act as a diffusion barrier to HCl. It accelerates ulcer healing and causes an accumulation of epidermal growth factor around the ulcer. In addition, it has a cytoprotective effect and increases mucosal secretion of prostaglandins and bicarbonate. It has bactericidal effects against *Helicobacter pylori* (which is associated with gastritis and peptic ulcers). It also prevents adhesion of *H. pylori* to epithelial cells and can inhibit enzymes secreted by *H. pylori*, such as proteases, lipases, glycosidases, and phospholipases.

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The Sensitive Method of Subvisible Particle Counting for the Detection and Quantification of Monoclonal Antibody Aggregation Caused by Freeze-Thawing: New Understanding of Particle Function in the Protein Aggregation Process

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Abstract

The purpose of this research was to measure the amount of subvisible particles formed throughout the freeze-thaw cycle of an IgG2 monoclonal antibody (mAb) using microflow imaging (MFI), a sensitive technique. Protein solutions in 20 mM histidine buffer (pH 5.5) were frozen and thawed three times before being examined using multiple-fraction isolation (MFI) and size-exclusion chromatography (SEC). While SEC could not identify aggregates, MFI demonstrated an increase in particle counts with each freeze-thaw cycle. Monitoring particle production enables the identification of protein aggregates containing just a tenth of a percent of the total protein mass, according to estimates of the total mass of particles generated. Even while SEC did not identify protein aggregation, variations in levels caused by various formulations or freeze-thaw protocols were addressed. The purpose of the freeze-thaw process in phosphate-buffered saline was to determine whether the total aggregate mass estimates derived from SEC and MFI were quantitatively compatible. This procedure reduced the monomer peak area in the chromatogram, which allowed SEC to identify insoluble aggregates at a detectable level. The amount of monomer lost as measured by SEC and the total mass of subvisible particles as measured by MFI were in excellent agreement. The following is a copyright notice from Wiley-Liss, Inc. and the American Pharmacists Association: J Pharm Sci 100:492-503, 2011

Protein formulation, infrared spectroscopy, particle size, liquid chromatography, and protein aggregation are all relevant terms.

Introduction :

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How the Effectiveness of Aluminum Salt Adjuvants in a Model Lysozyme Vaccine Is Affected by Particle Size and Antigen Binding

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Abstract

The immunogenicity of vaccines made using aluminum salt adjuvants may be diminished if these particles aggregate during the freezing and drying processes, according to certain claims. We used lysozyme as a model antigen and evaluated this notion by looking at the immune response in a mouse model to several vaccine formulations—liquid, freeze-thawed, and lyophilized. Particle size distributions (PSDs) and degrees of antigen-adjuvant binding were shown to vary greatly due to the different processing procedures and excipient quantities. Vaccines adjuvanted with aluminum hydroxide or aluminum phosphate showed anti-lysozyme titers that were unaffected by the degree of antigen binding to the adjuvant and were independent of the PSD. Copyright 2008 by Wiley-Liss, Inc. and the American Pharmacists Association, Journal of Pharmaceutical Science, 97, 5252–5262, 2008. Plurality of particles, adjuvant, lysozyme, aluminum hydroxide, and aluminum phosphate

INTRODUCTION

In order to stimulate an adequate immune response, adjuvants are necessary for vaccines that include recombinant proteins.1, 2 The only adjuvants used in U.S.-approved vaccinations that are now available for purchase are aluminum hydroxide, aluminum phosphate, and aluminum salt adjuvants. In contrast to aluminum phosphate, which has a plate-like molecular structure, aluminum hydroxide, also known as boehmite (AlOOH),3 is composed of needle-like particles with sizes of 2 nm. main particles in the 50 nm range and their phology.5 When combined in a solution, the two adjuvants produce stable porous aggregates with a diameter of 1–10 mm.4,5 Several factors are likely responsible for the incompletely known mechanisms of action of aluminum salt adjuvants.6–9 The first theory put up was that these particle adjuvants would serve as a depot at the injection site, allowing for the gradual release of the antigen after delivery.nine, ten Newer theories suggest that it helps get the antigen to cells that can present it, however this process has also been called into doubt.5,6 It is believed to stimulate the immune system and release Th2 cytokines11,12, and to destabilize protein antigens on the adjuvant's surface, allowing them to be more easily broken down by proteolytic enzymes, which are necessary for antigen removal. It is common for vaccines made with aluminum-salt adjuvants to lose some of their effectiveness after being frozen or lyophilized to make them more storage stable.the number of The reason for the decrease in effectiveness is believed to be the adhuvant particles

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What Limits the Adsorption of Cyclic Prodrugs of Opioid Peptides into Intestinal Cells (DADLE): Part I. The Function of Efflux Transporters in the Mucosa of the Intestine

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Abstract

In this work, we aimed to understand how P-glycoprotein (P-gp) limits the intestinal mucosal permeability of the opioid peptide DADLE (H-Tyr-D-Ala-Gly- Phe-D-Leu-OH) and its cyclic prodrugs (AOA-DADLE, CA-DADLE, and OMCA-DADLE). By incorporating GF-12098, cyclosporine (CyA), or PSC-833, which are recognized P-gp inhibitors, into the incubation media of AOA-DADLE, CA-DADLE, and OMCA-DADLE (71-117) in the Caco-2 cell model, the high Papp, BL-to-AP/Papp, AP-to-BL ratios were considerably reduced. This indicates that P-gp is limiting the AP-to-BL flow of these cyclic prodrugs. It was shown that AOA-DADLE, CA-DADLE, and OMCA-DADLE had very low mesenteric blood permeation (PB ¼ 0.40, 0.56, and 0.42 × 10—7 cm/s, respectively) in the in situ perfused rat ileum model. All three prodrugs showed a considerable rise in PB values when treated with PSC-833. While PSC-833 significantly increased the PB values of these prodrugs, CyA and GF-12918 had no effect or had a much less effect. These results indicate that P-gp isn't the only factor that limits the permeability of AOA-DADLE, CA-DADLE, and OMCA-DADLE across the intestinal mucosa of rats; other variables, such as substrate activity for other efflux transporters and metabolic enzymes, may also play a role.

Topics covered include: peptide administration, oral absorption, intestinal mucosa, in situ perfused rat ileum, Caco-2 cell efflux transporter, and prodrugs. Glycoprotein P-type

A brief overview

Our lab has developed and manufactured cyclic prodrugs of the opioid peptide DADLE (H-Tyr-D-Ala-Gly-Phe-D-Leu-OH) using a variety of promoiety linkers, including an acyloxyalkoxy (AOA) linker, a coumari-nic acid (CA) linker, and an oxymethyl-modified coumarinic acid (OMCA) linker, in an effort to enhance its oral bioavailability and its ability to pass the blood-brain barrier (BBB) (Fig. 1).The three cyclic prodrugs that resulted—AOA-DADLE, CA-DADLE, and OMCA-DADLE—are characterized by their lack of charges, relative lipophilicity,

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An Evaluation of the ADR Monitoring Center's Impact on Pharmacovigilance: A Cross-Sectional Study of Outpatients at a Multi-Super Specialty Hospital in Nellore

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ABSTRACT

Objectives: The purpose of this study is to assess the level of staff and patient understanding of adverse drug reaction (ADR) and pharmacovigilance systems at a super specialty hospital. In addition, we want to raise patients' awareness of the ADR reporting system. Research Tools and Procedures: At a hospital with several different specialties, researchers performed a cross-sectional study. A random sample of outpatients seeking medical attention at KIMS multi-specialty hospital were surveyed, and their demographic information was recorded. Created for the study: a questionnaire to gauge level of understanding and sentiment about ADR. Both Telugu and English versions of the demographic data form and questionnaire are provided. The people who took part in the research were given patient information booklets. We educated patients on how to use the ADR PvPI app to report adverse drug reactions yourself. Descriptional analysis was used to examine the data. The results show that the patients who visited the tertiary care hospital had a better understanding of ADR than the individuals who did not. There were fifty patients included in the trial. There was a significant lack of knowledge of pharmacovigilance among the participants (56%). The internet and social media had a significant role in raising awareness about this topic. Fifteen people (or 30% of the total) have reported adverse drug reactions (ADRs) after taking medicine, although only ten of those people really told their doctors about it. To a large extent, they do not see ADR reporting as critical. Additional factors contributing to underreporting of adverse drug reactions were transportation challenges and hospital rush. The pharmacovigilance center was unknown to all of the participants. They would rather inform their doctor about adverse drug reactions (ADRs). It is estimated that almost all patients (96%) were unaware of the ADR PvPI app. Results: Everyone who took part in the study learned how to use the ADR PvPI app to record their own adverse drug reactions. All participants were given a patient education booklet that explained adverse drug reactions (ADRs), where they might find the institution's pharmacovigilance center, and what to do if an ADR occurs.

Keywords: Topics covered include pharmacovigilance, drug safety, adverse medication reactions, and PvPI.

INTRODUCTION

Any "noxious and unintended response to a drug that occurs at doses normally used in man for prophylaxis, diagnosis, therapy of disease, or for the modification of physiological function" is considered an adverse drug reaction (ADR) by the World Health Organization. Overdose, drug misuse, treatment failure, and medication administration errors are not included in the criteria.1Pharmacovigilance is the branch of pharmaceutical research that focuses on the study of side effects and how to identify, evaluate, monitor, and avoid them.In 1986, the Indian government launched the Pharmacovigilance Programme, which included the proposal for a 12-center official ADR monitoring system. In a formal announcement made on July 14, 2010, the Indian government launched the PV Program for India (PvPI).3 To guarantee patient safety, the pharmacovigilance system relies on the spontaneous reporting of adverse drug reactions (ADRs), which are a leading cause of patient morbidity and death. Because many ADRs may go unrecognized when healthcare providers rely only on their own

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Loop Diuretic Use in Patients with Acute Diagnosis of Heart Failure or Left Ventricular Heart Failure: A Retrospective Analysis of Adverse Events and Complications

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ABSTRACT

This research was deemed noteworthy since the occurrence of adverse events linked to the use of loop diuretics is on the rise per individual. The purpose of this research was to examine the potential side effects of loop diuretics used to treat patients with acute heart failure or left ventricular failure (ADHF/LVF), including arrhythmia, hyponatremia, and renal impairment. The research was planned at the tertiary care hospital's cardiology and nephrology departments and is a single-center retrospective observational study. We gathered information from the patients' medical records. After that, the findings were obtained and adjusted using statistical analysis and detailed analysis. The most significant side effects were low potassium and sodium levels, as well as renal failure and cardiac dysregulation. There were 97 cases of arrhythmia (38.04% of the total), 115 cases of hyponatremia (45.10%), and 43 cases of acute kidney injury (16.86%) related to the adverse event. To name a few examples of diuretic-related adverse medication reactions: allergic rashes, stomach pain, swelling, nausea, vomiting, diarrhea, constipation, muscular spasms, and restlessness. After stomach pain (five cases, or 12.20%), allergic rashes (24 cases, or 58.54% of the total) were the most prevalent side effect. The research found that patients with heart failure who used non-potassium sparing diuretics were more likely to die from adverse events, whereas those who took potassium supplements had better results.

Keywords: Side effects, Problems, Diabetes mellitus type 2, heart failure patients, low potassium levels, loop diuretics.

INTRODUCTION

About half of the heart failure patients show signs of non-sustained ventricular tachycardia, and the majority of them have increased ventricular ectopy. Half of all cardiac fatalities occur suddenly and unexpectedly, most often as a result of arrhythmias. Hypokalemia is common in survivors of sudden cardiac death and is associated with a significantly lower level of myocardial K+ compared to controls. Patients with HF who use diuretics that do not spare potassium have an increased risk of death from any cause and cardiac complications. Use of non-K+-sparing diuretics is independently and strongly correlated with the occurrence of arrhythmia-related deaths. In addition, digoxin toxicity may occur in patients with hypokalemia because the medication is more likely to be bound to the heart muscle and renal clearance is decreased. As a result, ventricular arrhythmias and enhanced automaticity are brought about. In both animal and human models, diastolic dysfunction is worsened by K+ depletion.1 Arrhythmias such ventricular fibrillation (VF), ventricular ectopy, Torsades de Pointes (TDP), and polymorphic VT may be precipitated by hypokalemia. Evidence suggests that functional re-entry circuits are established by hypokalemia-induced changes in conduction and variability in action potential duration (APD) across regions. By decreasing the cardiac repolarization reserve and increasing intracellular Ca2+ in cardiomyocytes, hypokalemia also enhances induced arrhythmias.2

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In-Silico Molecular Dynamics and Docking Research on DNA Minor Groove Connectors

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ABSTRACT

The mechanism of molecular recognition in tiny molecules is the basis of the key challenges in drug development. Investigating hydrogen bonding and polar interactions is the primary method for determining the binding specificity of tiny molecules to DNA. We know very little about the molecular mechanisms of action of the majority of the minor groove binders. A thorough understanding of the molecular mechanisms by which these tiny molecules interact with DNA is necessary because they have the potential to be powerful therapeutic agents against a wide range of disorders. In this work, we used molecular modeling tools to evaluate the complexes' binding mechanism and stability. Researchers used molecular docking to look for specific binding spots and affinities inside the DNA minor groove. Using the AMBER and GROMACS programs, a molecular dynamics (MD) simulation of the DNA minor groove binders was conducted for 5 nanoseconds. We also examined the root-mean-square deviation (RMSD) over time to learn about the systematic deviation of docked complexes in MD simulations, and we discovered that the RMSD variations from AMBER and GROMACS MD simulations are almost identical. Molecular mechanics/generalized Born surface area (MM-GBSA) and Molecular Mechanics/Poisson–Boltzmann Surface Area (MM-PBSA) techniques were used to compute and decompose the binding free energies between the DNA and minor groove binders. Both the selection of MD techniques and the development of novel, highly effective DNA inhibitors may benefit from the study's comparative and systematic examination.

Keywords: *Methods for molecular docking and molecular dynamics (MD), minor groove binders, and MM-GBSA and MM-PBSA.*

INTRODUCTION

The genetic information passed down from parents to children is carried by deoxyribonucleic acid (DNA), a biomolecule with two helical strands that are complementary to each other and run in opposite directions. DNA is essential for many biological functions, such as protein synthesis (Transcription and translation) and cell division (DNA replication). Interactions between medicines and DNA are crucial to the majority of cancer treatments. Two major ways that drugs attach to DNA are intercalation and groove binding. These two binding modalities allow for interactions that are either covalent or non-covalent. An intercalator is a small molecule that can bind between base pairs in nucleic acids. The planar heterocyclic groups included in these compounds stack between neighboring DNA base pairs, causing a reduction in DNA helical twisting and an increase in DNA length. Conversely, groove binding is comparable to the conventional lock-and-key theories of ligand-macromolecular binding as it does not cause substantial changes in DNA conformation. These molecules attach to the nucleic acid's main and minor grooves. A crescent-shaped minor groove binder will compliment the minor groove's form.2-5. Methods via which drugs attach to DNA minor groove is primarily characterized in two stages. The first stage involves the electrostatic and hydrophobic contact that transfers the ligand to the DNA minor groove. Step two involves the ligand interacting with the functional groups of DNA base pairs in a variety of non-covalent ways. Hydrophobic and van der Waals contacts, electrostatic interactions, and hydrogen bonds are common examples of these types of interactions. A/T rich area is the binding site for the majority of minor groove binding drugs6–9.

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IN-VITRO CHARACTERIZATION AND AEROSOL DISPERSION PERFORMANCE OF TERBUTALINE SULPHATE AND ITRACONAZOLE NANOPARTICLES AS DRY POWDER INSUFFLATION FOR THE TREATMENT OF ASTHMA PREPARED BY PHYSICAL MIXING AND SPRAY DRYING

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ABSTRACT
The objective of the present work was to check an Aerosol Dispersion Performance of Terbutaline Sulphate and Itraconazole Nanoparticles as Dry Powder Insufflation for the treatment of Asthma. Dry powder nanoparticles of Terbutaline Sulphate and Itraconazole were aimed to develop using lactose and trehalose as carriers by physical mixing and spray drying. In this work spray dried nanoparticles containing Terbutaline Sulphate, Itraconazole and combination of both was rationally designed via organic solution advanced spray drying (no water) in closed mode from dilute feed concentration. It was observed that Scanning electron microscopy showed smooth and nearly spherical particles for spray dried formulations whereas formulations prepared through milling were found to have rough and irregular in shape. The Mean Median Aerodynamic Diameter (MMAD) values for milled systems decreased when compared to unmilled systems. For all physically mixed systems, the MMAD values ranges from 3.19 µm to 4.78 µm whereas the Geometric Standard Deviation (GSD) values were 1.50–2.96 µm. MMAD values for spray dried formulations ranges from 3.45 µm to 4.21 µm whereas the GSD values were 1.85–2.83 µm. These results concluded that, this novel dry powder inhaler has great potential in treatment of asthma.

Keywords: Terbutaline Sulphate, Itraconazole, Lactose, Trehalose, Physical mixing, Spray drying, Aerosol dispersion performance.

INTRODUCTION
Inhalational drug delivery has become one of the most important routes for systemic delivery of drugs [1]. One of the main advantages of delivering a drug through inhalation is avoiding first pass metabolism [2]. Clinical effects not only depend on aerosol generation and deposition but also on pulmonary absorption and effectiveness [3]. Asthma remains the number one chronic disease of childhood with 12.8 million school days missed. Statistical data on asthma showed that, children missed 12.8 million school days, includes 1.7 million emergency department visits, 10.6 million physician office visits, 444,000 hospitalizations and 3,613 deaths [4]. Hence in the present research, Terbutaline Sulphate (bronchodilator – dilates bronchioles) and Itraconazole (antifungal – to prevent allergens like *Aspergillus fumigatus*) was used to prevent asthma. Inhaled nanoparticulate drug delivery was found to be the best in delivering the drug deep into the lung. Inhaled drug delivery systems may not be much effective in depositing a drug in small airways. Within the inhalational technologies DPIs was found to be best because of its simplicity, ease of use and maximum deposition of drug deep in the lungs [5]. Deposition of inhaled aerosol is directly related to particle size; the smaller the particle, the farther they travel and settle in deeper and smaller airways. Submicron sized particles tend to deposit in bronchi and bronchioles whereas nano sized particles reach upto alveoli [6-8]. Hence in the present research the drugs and excipients were milled to nanosize in order to evaluate the aerosol dispersion performance. Size of the nanoparticles ranging from 10 to 1000nm holds a promising role in respiratory drug delivery. Many *In-vitro* and *In-vivo* studies revealed that nanoparticles are promising carrier systems for respiratory drug targeting, particularly to alveoli [9-12].

MATERIALS & METHODS

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A Study on the Characterization and Stability Implications of Investigating Local Mobility in Amorphous Pharmaceuticals

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ABSTRACT: Recent years have seen a flurry of activity in the quest to determine whether or not amorphous drug physical and chemical stability are correlated with molecular mobility. The focus of these studies has been on molecular motions associated with glass transition or global mobility. However, there were a few of instances when the volatility defied explanation by global migration. It is becoming more accepted that local mobility (b-relaxations), which are much below the glass transition temperature, could be influencing stability. The mobility of an amorphous pharmaceutical below the glass transition temperature (g) is often determined by extrapolating data gathered above Tg. This kind of study isn't ideal for determining exact local mobility, but it could provide information on overall mobility. From a pharmacological point of view, our primary objective is to demonstrate the significance of local motions in amorphous medicines, particularly in the Johari-Goldstein relaxations. A evaluation of the coupling model that connected local movements with global mobility was conducted to bring attention to the potential impact of local mobility on the stability of amorphous phases. The local motions in an amorphous matrix, found in molecular dispersions, have been investigated, and the influence of water and other additives has been considered. Ultimately, we have provided a brief overview, outlining the pros and cons, of the most popular instrumental approaches to local movement characterization. The publisher, Wiley-Liss, Inc., retains all rights.

Keywords: Crystallization, solid dispersion, lyophilization, mobility, and amorphous

INTRODUCTION

1. Amorphous versions of certain active pharmaceutical ingredients (APIs) used in medication formulation are often manufactured.1 The issue of compounds' poor water solubility and, therefore, their slow rate of dissolution is being addressed by this approach, which is

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Tolerance symptoms of ketamine-A Review

Yadala Prapurna Chandra, P.Nageswari , P.Sailaja , P.Punitha

As a pharmacological phenomenon, drug tolerance occurs when the body's reaction to a medicine decreases with repeated administration, necessitating bigger dosages to have the same therapeutic effect (Editor). There are primarily two causes for tolerance to develop:

1. Pharmacokinetic: This leads to a decrease in the drug's efficacy due to its rapid metabolism.
2. Adaptive changes, including a rise or reduction in the number of receptors, as seen with morphine, occur in pharmacodynamic terms.

Ketamine is a drug that's gained popularity in recent memory as a means of managing pain, depression, and other conditions that affect individuals. The drug became known for its use in the nightclub and the rave scene, which warranted significant concern because of its intense effects. In the hands of medical professionals, ketamine treatment is a safe and effective means of managing these conditions. However, when abused, ketamine tolerance and dependence can occur, which can lead to ketamine addiction. In this blog, we'll discuss how ketamine use has become a widespread problem and how to manage ketamine tolerance. In tachyphylaxis, the drug's effect quickly decreases as a result of the depletion of mediators inside the presynaptic membrane of nerve terminals, a phenomenon comparable to tolerance. Short intervals between dosages of the medicine are what trigger this depletion. But this effect remains even after dosing increases.

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Spectrophotometric Method Development and Validation of Levosulpiride in Bulk and Pharmaceutical Formulations.

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Abstract

A validated UV-Visible spectrophotometer technique was used to assess the levosulpiride concentration in both bulk and pharmaceutical formulation. In 0.1 N HCl, the maximum wavelength (λmax) measured for levosulpiride was 288.1 nm. Between 6 and 36µg/ml, the medication demonstrates linearity. The standard graph showed a correlation value of 0.999. The suggested procedure produced test percentages of commercial formulations that were consistent with the claims made on the label. A recovery experiment was conducted at three distinct levels (80%, 100%, and 120% recovery) to verify the method's accuracy. The percentage recovery ranged from 98.00% to 102.00%. The method's accuracy and repeatability were confirmed by the low % RSD. Experimentation with the method's repeatability, precision, and intra- and inter-day fluctuations showed that it agreed well with %RSD. The suggested approach was determined to be strong and resilient. Levosulpiride, both in bulk and medicinal dose form, may be routinely analyzed using the aforementioned approach.

Keywords: Area under the curve, validation, levosulpiride

Introduction

The anti-psychotic Levo-isomer of sulpiride is known as levosulpiride. Peptic ulcers, anxiety problems, and schizophrenia are among the conditions that it helps alleviate. According to Figure 1, its chemical formula is 5-(aminosulfonyl)-N-[(1-ethyl-2-pyrrolidinyl)methyl]-2-methoxybenzamide. The Merck Index includes it.2) No pharmacopoeia recognizes it as an official ingredient.

By inhibiting the pre-synaptic dopamine synthesis and release, levosulpiride acts as a D2-dopamine antagonist, which, at low dosages, enhances the dopaminergic neurotransmission.(3) Functional dyspepsia, psychosis, and depression are common indications for its prescription. Tonini et al. tested the racemic activity and found that the Levo version was more active. Levosulpiride toxicity was investigated by Lozano et al.(5) The UV Spectrophotometric and RP-HPLC methods for estimating levosulpiride in both bulk drug and formulation were established by Silambaresan et al.(6) It is the aim of this research to provide analytical techniques for the bulk and formulation determination of levosulpiride that are easy to use, sensitive, accurate, economical, and specific.

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ORIGINAL ARTICLE

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Formulation, characterization and evaluation of nanoparticles based dry powder insufflation containing terbutaline sulphate and itraconazole for the treatment of asthma

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Aerosol dispersion performance,
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Itraconazole,
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Physical mixing,
Spray drying,
Terbutaline Sulphate,
Trehalose

ABSTRACT

Many factors affect the pulmonary drug delivery and stability of the nanoparticles an acupuncture consisting of bronchial asthma. Present research envisages on the development of dry powder nanoparticles as insufflation a acupuncture consisting of bronchial asthma (allergy due to *Aspergillus fumigatus*) using physical mixing and spray drying. Different founding are prepared and characterized with suitable excipients like lactose and trehalose. The particle size distribution of nano milled and spray-dried particles of Terbutaline Sulphate and Itraconazole showed unimodal size distribution. The formulations prepared with trehalose as the carrier showed less D_{v90}, D_{v50} and D_{v10} values due to the fineness in the particles of trehalose when compared to lactose. The D_{v50} and D_{v10} values were in the range of mountains of 0.43-0.89 μm and 0.21–0.49 μm for all formulations, which shows the primary particle size in the nanometer scale. Smooth and nearly spherical particles were produced for spray-dried formulations when compared to milled formulations. Zeta potential comes across until be between +17±0.13 to +32±0.12, which explains the particles as moderately stable. MMAD values ranges from 3.19 μm to 4.78 μm for milled nanoparticles and 3.45 μm to 4.21 μm for spray-dried particles. Formulated nanoparticles exhibited good spreading properties, which will allow all the particles to deposition palmy profusion territories consisting of the lung. *In-vitro* drug release studies explains that spray-dried formulations of Terbutaline sulpahte and Itraconazole using lactose as excipients released the drug upto 98.9% and 99.1% in 180mts.

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INTRODUCTION

Nanoparticles gained therapeutic importance flourishing respiratory organ trental delivery due to its ability to enter into deeper parts of the lung, to elude powerful pulmonic dendrites along with mucociliary consent methods, sequent in prolonged residence time (Daniher and Zhu, 2008; Daraghmeh *et al.*, 2002). Statistical data on asthma showed that children missed 12.8 million school days, with 444,000 patients hospitalized, 1.7 million emergency visits, physician visits of about 10.6 million

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IN-VIVO AND STABILITY STUDIES OF DRY POWDER INSUFFLATION CONTAINING TERBUTALINE SULPHATE AND ITRACONAZOLE NANOPARTICLES FOR THE TREATMENT OF ASTHMA

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Keywords:

Asthma, Dry powder insufflation, Terbutaline sulphate, Itraconazole, Pharmacokinetics, Stability

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ABSTRACT: The present research was envisaged on the development of dry powder to treat asthma. Terbutaline sulphate (a bronchodilator) and Itraconazole (an antifungal) were used in the present study for bronchodilation and allergy to *Aspergillus fumigatus* (fungi) using lactose and trehalose as excipients. Dry powder insufflations were prepared by physical mixing (milling) and spray drying, out of which spray dried formulations with lactose as excipient gave the best results *in-vitro*. Hence, spray dried formulations were preceded for further pharmacokinetic and stability studies. The pulmonary concentrations of Terbutaline sulphate and Itraconazole from TER – A (sd), ITR – A (sd), TER: ITR – A (sd) monotonically decreased (T_{max} = 0 min). However, Itraconazole showed higher AUC0-α in individual and combined formulation when compared to Terbutaline sulphate showing slower elimination of Itraconazole. From plasma pharmacokinetic data T_{max} of Itraconazole formulations ITR – A (sd), TER: ITR – A (sd) was high when compared to the formulations of Terbutaline sulphate TER – A (sd), TER: ITR – A (sd) showing lower systemic bioavailability of Itraconazole when compared to Terbutaline sulphate. Stability studies for Drug content and *in-vitro* dispersion performance were conducted and results showed a decrease in drug content when kept at 40 ± 2 °C and 75% ± 5% RH. The MMAD and GSD values were increased (from 4.67 µm to 6.32 µm whereas the GSD values were 2.24-3.48 µm) on stress conditions during accelerated, intermediate and long term stability studies.

INTRODUCTION: Invasive pulmonary aspergillosis is a disease caused by *Aspergillus fumigates* (fungi) which is one of the main reasons for asthma with high morbidity and mortality (up to 90%) [1, 2]. Hence, Itraconazole (ITR) is used as a first-line drug to treat aspergillosis [3].

Terbutaline sulphate (TER) is used for bronchodilation as a supportive treatment for the above infection. The concentration of Itraconazole in lung should be high at the alveolar region to inhibit the growth of Aspergillus with low plasma concentration [4].

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Hence, dry powder insufflation (DPI) was found to be the best method to target the drug directly to the lungs. Itraconazole is a poorly water-soluble drug which is a major obstacle to formulate it as DPI. The undissolved ITR may be eliminated by macrophages resulting in reduced drug concentration in the lung [5].

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What Limits the Adsorption of Cyclic Prodrugs of Opioid Peptides into Intestinal Cells (DADLE): Part I. The Function of Efflux Transporters in the Mucosa of the Intestine

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Abstract

In this work, we aimed to understand how P-glycoprotein (P-gp) limits the intestinal mucosal permeability of the opioid peptide DADLE (H-Tyr-D-Ala-Gly- Phe-D-Leu-OH) and its cyclic prodrugs (AOA-DADLE, CA-DADLE, and OMCA-DADLE). By incorporating GF-12098, cyclosporine (CyA), or PSC-833, which are recognized P-gp inhibitors, into the incubation media of AOA-DADLE, CA-DADLE, and OMCA-DADLE (71-117) in the Caco-2 cell model, the high Papp,BL-to-AP/Papp,AP-to-BL ratios were considerably reduced. This indicates that P-gp is limiting the AP-to-BL flow of these cyclic prodrugs. It was shown that AOA-DADLE, CA-DADLE, and OMCA-DADLE had very low mesenteric blood permeation (PB ¼ 0.40, 0.56, and 0.42 × 10—7 cm/s, respectively) in the in situ perfused rat ileum model. All three prodrugs showed a considerable rise in PB values when treated with PSC-833. While PSC-833 significantly increased the PB values of these prodrugs, CyA and GF-12918 had no effect or had a much less effect. These results indicate that P-gp isn't the only factor that limits the permeability of AOA-DADLE, CA-DADLE, and OMCA-DADLE across the intestinal mucosa of rats; other variables, such as substrate activity for other efflux transporters and metabolic enzymes, may also play a role. Copyright 2008 Wiley-Liss, Inc. and the American Pharmacists Association, Journal of Pharmaceutical Science, 98(3), 337–348.

Topics covered include: peptide administration, oral absorption, intestinal mucosa, in situ perfused rat ileum, Caco-2 cell efflux transporter, and prodrugs. Glycoprotein P-type

A brief overview

Our lab has developed and manufactured cyclic prodrugs of the opioid peptide DADLE (H-Tyr-D-Ala-Gly-Phe-D-Leu-OH) using a variety of promoiety linkers, including an acyloxyalkoxy (AOA) linker, a coumari-nic acid (CA) linker, and an oxymethyl-modified coumarinic acid (OMCA) linker, in an effort to enhance its oral bioavailability and its ability to pass the blood-brain barrier (BBB) (Fig. 1).The three cyclic prodrugs that resulted—AOA-DADLE, CA-DADLE, and OMCA-DADLE—are characterized by their lack of charges, relative lipophilicity, and the

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A randomized, parallel, open-label clinical study comparing the effectiveness and safety of apremilast with methotrexate in individuals with moderate to severe palm plantar psoriasis.

P.V.Madhava Reddy , A.V.S.Muralidhar Reddy, P.Sailaja ,P.Naresh Babu

Abstract:

Various studies have revealed varying outcomes regarding the safety and effectiveness of apremilast in comparison to methotrexate. Therefore, more research into the function of A premilast in palmo plantar psoriasis is required. Patients with moderate to severe palmoplantar psoriasis were the subjects of a randomized, prospective, parallel-group, open-label trial. For 16 weeks, they were randomly assigned to either the methotrexate group (n = 19) or the apremilast group (n = 22). Reduced scores on the modified palmoplantar psoriasis severity index (mPPPASI) from week 0 to week 16 served as the primary effectiveness metric. Additional metrics included the percentage of patients who achieved a Static Physician Global Assessment score of 0 (clear) or 1 (almost clear), the percentage of patients who achieved mPPPASI75 (75% reduction in mPPPASI score) by the end of 16 weeks, and the proportion of patients who demonstrated a dermatology life quality index decline of at least 5àpoints from the beginning. At 16 weeks, there was no statistically significant difference between the two groups in terms of m-PPPASI score drop, however there was a significant decline from week 0 to week 16 within the group. The secondary efficacy measures had identical outcomes. Out of the twenty-four adverse events documented in the methotrexate group, three individuals had abnormal liver function tests. Out of the 19 adverse events documented in the apremilast group, 2 patients had an infection of the upper respiratory tract. In the treatment of moderate to severe palmoplantar psoriasis, apremilast is just as effective as methotrexate, but it is more tolerable. Static Physician Global Assessment, Dermatology Life Quality Index, Palmoplantar Psoriasis, Palmoplantar Psoriasis Area and Severity Index, Apremilast

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New obstacles in the continuing opioid epidemic: tapentadol skin popping

K.Sumanth Kumar , P.Sailaja , Yadala Prapurna Chandra, P.Pravallika ,

Introduction

Subcutaneous or intradermal injection of illegal substances is known as skin popping. Some people like this method of using illegal drugs. Intravenous injections may potentially unintentionally burst the skin if the injector is not careful or if the veins are inaccessible because of thrombosis.[1] The opioid market in India is one of the biggest in the world. In the past ten years, there has been a noticeable rise in the worldwide trend of seized prescription opioids. The most common synthetic opioid confiscated between 2016 and 2020 was tramadol. Following its nationalization, both production and confiscated amounts of tramadol in India decreased. Nevertheless, there is a lack of prevalence statistics on tramadol usage, and the trafficking of this drug persists. In certain locations, the more established opioid tramadol is being replaced with the more recent opioid tapentadol.[2] in Rare cutaneous nodules caused by tapentadol skin popping have been reported.

A 30-year-old man who had been experiencing several cutaneous nodules for the previous seven months came to see us in our outpatient department. His habit of injecting himself with tapentadol every day was exposed in his extensive medical history. A mixture of crushed 50 mg tablets of Tapentadol and distilled water was administered using an insulin syringe. The tablet's packaging identified titanium dioxide as the active ingredient. Nodules appeared at the injection location, but they disappeared after a week or two, leaving behind skin discolouration, according to his report. He said that he always used new needles for injections. The injection sites did not exhibit any signs of infection, such as discomfort or discharge, in the past. He worked as a manual laborer and said that stopping the injection would leave him too exhausted to do his job. Figure 1a and b show that the patient's upper limbs and shoulders had a few puckered scars, hyperpigmented macules, and many nodules that were skin-colored, hyperpigmented, or

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Research on the Efficiency and Results of Clinical Pharmacist-Administered Educational Inhaler Technique Counseling in the Respiratory Department

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ABSTRACT

Background: Proper inhalation technique is essential for the most effective delivery of inhaled medicine to the lungs and is a key component determining the efficacy of inhaled medication. Because of how important it is for patients with respiratory diseases to know how to use the inhaler correctly, we performed this research to evaluate technique and educate on inhaler methods. Research Tools and Procedures: From October 2019 to March 2020, researchers from Dhiraj Hospital's Department of Respiratory Medicine in Vadodara carried out a cross-sectional interventional study. The procedure for inhalation was assessed using a dedicated checklist developed by the NHS Liverpool Clinical Commissioning Group for use with inhaler devices. In addition to physically demonstrating the right way to use the inhaler, patients who were using it incorrectly were counseled. To determine the intervention's efficacy, scores were taken before and after the intervention. The study's results show that 120 patients participated. Inhaler method was rated as bad (11.67%), intermediate (58.33%) and excellent (30%) before therapy; after counseling, the corresponding ratings were 87.50%, 12.50%, and 0%. With a p-value of 0.6686, the Pearson correlation coefficient (r) shows a very favorable relationship between the mean scores before and after the intervention. There was a strong correlation between age and literacy level and inhaler procedures. In conclusion, most patients were using their inhalers incorrectly before counseling, but after counseling, a significant increase in the number of patients using the correct technique was observed, indicating that clinical pharmacists' frequent counseling is essential and can improve therapeutic outcomes and efficacy.

Key words: National Health Service (NHS) asthma and chronic obstructive pulmonary disease (COPD) patient tools kit.

INTRODUCTION

When the lungs and other respiratory system components are sick, it's called a respiratory disease. Pleurae, bronchioles, pleural cavity, bronchi, alveoli, and respiratory muscles are the primary areas it mostly impacts. Chronic obstructive pulmonary disease (COPD) affects around 3 million lives annually, affecting an estimated 65 million individuals. With an estimated 334 million cases worldwide, asthma is by far the most prevalent chronic illness. One of the leading killers for quite some time now is acute infection of the lower respiratory tract. While 10.4 million people are infected with TB, and 1.4 million succumb to the disease annually.one, two One important tool in the treatment of respiratory illnesses, especially asthma and chronic obstructive pulmonary disease (COPD), is the inhaler, a medical device that delivers medication directly into the body via the lungs.

An important determinant of the efficacy of inhaled medicine is the method of inhalation. If you want your medicine to reach your lungs as effectively as possible, you must inhale correctly. It is critical to know how to use the inhaler correctly and to have sufficient information about inhaler usage. The medicine enters the tiny airways deep into the lungs when the right method is used. Many common mistakes occur when patients use the inhaler incorrectly, such as not closing it after use, not shaking it before each use, not breathing in correctly, and holding it in the wrong posture.3,4 This has an impact on disease management, raises the expense of therapy, and reduces drug delivery to the lungs. Patients with chronic obstructive pulmonary disease (COPD) or asthma may also be at increased risk of hospitalization on maintenance treatment. Inhaled corticosteroids might increase the risk of side effects such oral candidiasis and dysphonia if the patient does not use the inhaler correctly. Improving results and treating illness may be achieved by checking and modifying the inhaler method.5,6 Patients with chronic airflow blockage

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Advances in oral chitosan based nano delivery system for colon targeted drug delivery in inflammatory bowel disease

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Abstract

Nanomaterials can be used as drug carriers with multiple features, including target delivery triggered by environmental, pH, thermal responses, enhanced biocompatibility, and the ability to cross the blood-brain barrier. Chitosan (CS) is a natural polysaccharide largely obtained from marine crustaceans. It provides drug delivery vector for therapeutic CS and diagnostic CS, owing to its biocompatibility, biodegradability, low toxicity, and structural variability. Derivatives of CS such as quaternized CS, thiolated CS and carboxylated CS have enhanced its effectiveness in oral absorption of macromolecular drugs. This review discusses different forms of nanomaterials generated from CS and its derivatives for controlled drug delivery.

To

Keywords

Chitosan, Crustaceans, Biocompatibility, Controlled drug delivery.

To

To

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FORMULATION AND OPTIMIZATION AND *IN VITRO* CHARACTERIZATION OF OLANZAPINE LIPOSOME

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ABSTRACT

Objective: Olanzapine (OZ) is a thioeno benzodiazepine class second-generation or atypical antipsychotic that selectively binds to central dopamine D2 and serotonin (5-HT2c) receptors used for the treatment of schizophrenia and bipolar disorder. The present paper is aimed at developing an optimized liposome-loaded OZ as an approach for brain targeting through the nasal route for effective therapeutic management of schizophrenia.

Methods: The OZ liposomes were prepared by the thin-film hydration method. Various independent variable such as phospholipid, cholesterol and sonication time was optimized by using Design-Expert® Software to obtain the dependent variables of entrapment efficiency, vesicle size and zeta potential. The optimized formulation was predicted based on the response obtained by the point prediction method.

Results: The entrapment efficiency of the formulation was range between 72.9 and 85.1 %. The average particle size of all the 15 experimental runs lies between the minimum and maximum values of the size 258.33 to 325.32 nm, respectively. The zeta potential ranges from-27.53 to-11.46 mV. The optimized formulation for characterized for its morphology by Transmission Electron Microscopy (TEM). *In vitro* release studies of OZ-loaded liposomal formulation was carried by dialysis sac method using pH 7.4 phosphate buffer (PBS) as a medium. The maximum release was found to be 98.43±1.2 % up to 24 h. The R^2 zero-order kinetics and Korsmeyer-Peppas model was found to be 0.9919 and 0.9664, respectively. The zero-order shows the best-fit model with a highest R^2 value exhibiting better correlation and the 'n' value was also found to be 0.85; indicating both diffusion-controlled and swelling-controlled drug release that is anomalous transport.

Conclusion: The results, clearly states that the prepared formulations justify the parameters and OZ might be a suitable candidate to target the brain through nasal delivery.

Keywords: Design expert, Entrapment efficiency, Lipid film hydration, Liposomes, Schizophrenia

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POTENTIAL OF URAI MATHIRAI (PEDIATRIC SIDDHA FORMULATION) FOR THE PROPHYLAXIS AND MANAGEMENT OF COVID-19 IN CHILDREN

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Review Article

ABSTRACT

The World Health Organization (WHO) data proposes that 8.5% of reported COVID-19 cases belong to pediatric population who are aged less than 18 years. Supportive care alone is recommended in asymptomatic, mild, or moderate pediatric COVID-19 patients by the panel of pediatric infectious diseases physicians and pharmacists from 20 geographically diverse North American institutions. This review article focuses on the prophylactic and therapeutic potential of Urai mathirai in the management of pediatric COVID-19 patients. The literature was looked, in databases such as Medline/PubMed Central/PubMed, Google Scholar, Science Direct, Web of science, Directory of open access journals (DOAJ), and reference lists to distinguish published manuscripts relevant to the use of Urai mathirai to prevent or treat COVID-19 in children. The herbs found in Urai Mathirai and their bioactive phytoconstituents possess antiviral, anti-inflammatory, antioxidant, immunomodulatory, bronchodilatory and other pharmacological effects relevant to the management of signs and manifestations of COVID-19. The viability of Urai Mathirai in the prophylaxis and management of pediatric COVID-19 patients could further be established by future clinical studies.

Keywords: SARS CoV-2; COVID-19; pediatric siddha formulations; urai mathirai; herbal formulations.

1. INTRODUCTION

The current pandemic Coronavirus disease 2019 (COVID-19) is a viral illness, recognized to begin with in Wuhan, China in December 2019 and is caused by a novel coronavirus, which has been named later as Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) [1]. Around 212 million of worldwide populace have become SARS-CoV-2 positive and 4.43 million among them lost

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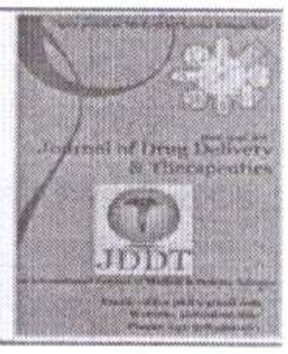

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Research Article

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Formulation and Evaluation of Lamivudine Nanosuspension

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Abstract

The present research aimed to develop & Evaluation of Lamivudine Nanosuspension. Lamivudine is a potent *in vitro* inhibitor of human immune deficiency virus belongs to the category of anti-retroviral drugs. The formulated Nanosuspension was subjected to various evaluation parameters like particle size, polydispersity index, zeta potential, drug content, viscosity, saturation solubility studies, *In vitro* release, treatment of kinetic data, and stability studies. The polydispersity ranged from 0.218 PDI to 0.331 PDI and zeta potential ranged from -1.60 mV to -4.79 mV are the important evaluation parameters are responsible for the stability of nanosuspensions. The Polydispersity index presents the quantity of particle size distribution ranges from 452.4 nm to 532.2 nm. In this result, LNSF4 shows spectacular drug content range of 86±1.8% to 97±2.5% it is the maximum drug content. The Brook field viscometer to determine the viscosity of Lamivudine Nano suspension of different formulations was found to be 44.4±2.1 cps to 87.7±1.4 cps. The general Nanosuspension formulations LNSF4 shows 98.64 % better controlled released in comparison with abundant formulation. In all the cases the best-fit model encounter uoto be peppas with 'n' value between 0.768 to 0.917. The 'n' value of formulation LNSF4 was 0.876 and suggesting so the drug was released by Zero-order kinetics. Acceleration stability studies intermediate storage condition has been changed from 30°C ± 2°C and 60% RH ± 5% Relative Humidity. After a 90 days study it revolves that there's no change in Drug content, *In vitro* drug release, and particle size.

Keywords: Lamivudine, Nanosuspension, Saturation solubility, Scanning Electron Microscopy, Stability study.

INTRODUCTION:

Nanosuspension is defined as a sub-micron colloidal system it's contains the poorly soluble drug, waver in a suitable dispersion medium stabilised by the surfactants. Nanosuspension usually consists of colloidal carriers like polymeric resins which are inert [1]. They help in the enhancement of drug solubility and thus bioavailability. Unlike microemulsions, there is no irritant in nature. Nanosuspension also imparts stability of your drug within the formulation. Nanosuspension can be prepared by different methods such as high-pressure homogenization and media milling. Lamivudine has been formulated in many formulations but they do not overcome the main limitations like therapeutic effectiveness of Lamivudine [2] its dose-dependent toxicity, short biological half-life, and poor bioavailability, effectively so were developed the nanosuspension in high-pressure homogenizer technique. An effort has to conquer the problem with prepared Nanosuspension. The main objectives involved in the study are to extend the dose of medication of the drug to increase the rate plus extent of absorption of the drug to enhance the effectiveness in therapy.

MATERIALS AND METHODS:

Lamivudine was obtained as a gift sample from Hetero Pharmaceutical PVT Limited, Hyderabad, HPMC K-30, Eudragit S 100, Tween-80, PVP K-30, Poloxamer 188, Methanol was purchased from Himalaya pharmaceutical, Nellore and other ingredients used were of Analytical grade.

METHODOLOGY

Drug and excipients interaction (FTIR)

The compatibility between pure drug and polymers like HPMC K-30, PVP K-30, poloxamer-188, Eudragit S100 were detected by FTIR spectroscopy (Bruker Pvt. Ltd, Germany). The finely grounded powder was introduced into stainless steel die [3]. The powder was pressed in the die between polished steel anvils at a pressure of about 10t/in2. For liquid samples, a thin film of sample liquid is made on a pellet.

Preparation method of Nanosuspension

The drug used to be molten in methanol to prepare an organic solution and fixed Amount (Table 1). The polymers and surfactant are dissolved in a mentioned quantity of water it is the aqueous phase. The aqueous water is kept under a high- pressure homogenizer (Remi RQ- 127) at

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Improving the Precision of Ibuprofen Free Acid and Its Salts in Vitro Dissolution Assays

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ABSTRACT

Researchers have questioned the predictive potential of in vitro dissolving tests for BCS class 2 weak acids utilizing the Bio pharmaceutics Classification System (BCS) as an experimental design to predict in vivo bioequivalence results. As a potential strategy for guaranteeing the discriminative capability of the in vitro dissolving techniques, this study examined the influence of buffer concentration media. Various salt forms of ibuprofen, as well as the free acid, were used to evaluate this method. In order to improve the discriminative power of the in vitro dissolution tests, the concentration of buffers used to prepare media that mimic intestinal conditions was adjusted to match that of bicarbonate buffer, the most common species of buffer in living organisms, so that both sets of samples reached the same surface pH (pH0). In order to enhance the resemblance to the in vivo findings, a two-stage test was combined with a pretreatment at an acidic pH to mimic the circumstances in the stomach. In order to more accurately represent the in vivo performance of the different formulations, the 2-stage test allowed for a more physiologically realistic accounting for variations in disintegration.

Introduction

Numerous drug regulatory agencies' legislative frameworks have included the scientific concepts of the Bio pharmaceutics Classification System (BCS) since 1995.1- 4 The opportunity to offer regulatory relief for the registration of oral solid immediate-release formulations containing BCS classes 1 and 3 drugs has been widely agreed upon, but it does not appear to be easy to extend the BCS-based bio waiver to certain BCS class 2 drugs. Despite the fact that from 2006 to 2015, the World Health Organization (WHO) advised against conducting in vivo bioequivalence (BE) studies on certain weakly acidic compounds that are poorly soluble but highly permeable. These compounds must meet the "rapid dissolution" criteria at pH 6.8, have a dose number of ≦1, and achieve similar dissolution to the comparator product at pH 1.2, 4.5, and 6.8.2 Due to a lack of evidence, this idea was not adopted by many other regulatory bodies, and the World Health Organization (WHO) has recently recanted its stance in its most recent BE guidelines.5

To clarify how scientists generate hypothesis in his seminal 1959 work, Popper6 built on Sir Francis Bacon's inductive empiricism approach. A 2006 conjectural hypothesis in the BCS-based bio waiver area at the WHO postulated that weak acids with a high permeability and limited solubility may dissolve quickly in the intestines, leading to complete absorption. From then, the BCS-based bio waiver for these drugs was constructed. Like the "all swans are white" paradigm, the World Health Organization (WHO) idea cannot be conclusively supported by any number of favorable correlations between in vitro disintegration data and in vivo BE studies. But one bad example, the "black swan," shows that the idea can't be true.6,7 Ibuprofen is a classic example of a BCS class 2 weak acid. The World Health Organization (WHO) proposed doing BE studies in vitro instead of in vivo, using the experimental dissolution conditions suggested by the regulatory BCS guidelines. These conditions include 50 mm phosphate buffer at pH 6.8, stirred at 75 rpm with a paddle apparatus. However, this theory is now in question.8,9 Using pharmacopoeia experimental conditions for in vitro dissolution tests of oral solid immediate-release formulations containing BCS class 2 drugs has not been found to aid in the diagnosis of a BE or non-BE. These tests are intended for quality control and to release the entire dosage form's worth of

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Skin cancer patients undergoing etoposide, prednisolone, vincristine, and cyclophosphamide therapy may have hyperpigmentation of the teeth and tongue.

E.Rajini , Yadala Prapurna Chandra , K.Sumanth Kumar , P.Sailaja

Abstract

Chemotherapeutic medicines such as etoposide, vincristine, and cyclophosphamide are often used to treat the uncommon malignancy known as cutaneous extranodal non-Hodgkin lymphoma. These drugs very infrequently produce hyperpigmentation in the skin and nails. Here, however, we report an instance of hyperpigmentation that spread to the teeth and tongue. It wasn't long after chemotherapy started that the tongue and teeth began to hyperpigment. No pharmaceutical, surgical, or lifestyle therapies were necessary for the hyperpigmentation to resolve itself within a week.

Search Terms: Hyperpigmentation, cyclophosphamide, teeth, and tongue

Malignant T cells infiltrating the skin is a hallmark of utaneous T-cell lymphomas, a diverse category of non-Hodgkin lymphomas that do not originate in the lymph nodes.In addition, most of these cases fall within the categories of mycosis fungoid and Sezary syndrome, which are defined by skin lumps.Due to the paucity of diagnostic signs in early lesions and the lack of particular presentations in early stages of T cell lymphoma, early diagnosis may be challenging [2].the third Although the specific mechanisms by which cutaneous T cell lymphoma develops remain a mystery, they may include signaling, skin lesions, and their precise locations.Accurate histological examinations, supplementary testing (such as CD4 cell identification), and other criteria are required for a cutaneous T cell lymphoma diagnosis [4].

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Phytochemical analysis, traditional applications, Pharmacology and toxicity of Thymus serpyllum

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Abstract:

The Lamiaceae family understudied perennial plant *Thymus serpyllum L*. has a long history of use in the treatment of gastrointestinal and respiratory disorders in the higher foothills of India. Our present understanding of *T. serpyllum* traditional applications, phytochemistry, and pharmacology is not well-rounded, and that is the goal of this review. Gathering up-to-date knowledge on this plant is our top priority, as is promoting more in vivo and in vitro studies to back up local claims. Due to its varied pharmacological qualities, such as antioxidative, antibacterial, anti-inflammatory, and anticancer activity, the essential oil extracted from *T. serpyllum* has garnered substantial interest as a plant-derived product. When it comes to creating novel medications to tackle a wide range of health sector issues, ethnomedicinal research has shown that *T. serpyllum* has a lot of potential. Pharmacological investigations alone are insufficient to support the widespread usage of *T. serpyllum*. In most cases, researchers use either in vitro or in vivo methods. To evaluate these medical assertions, more research is needed in the form of carefully orchestrated pharmacological trials. The findings of this evaluation will serve as a springboard for more studies. Despite *T. serpyllum* extensive traditional usage, there has been a dearth of pharmacological research, with the majority of investigations conducted in either in vitro or in vivo settings. Important topics to explore include further chemical isolation, thorough pharmacological study, and potential culinary uses.

Keywords: Pharmacological properties, phytochemistry, *Thymus serpyllum*, toxicity, traditional applications

Introduction :

The contemporary world is responsible for improving immune responses and achieving excellent health via the use of medicinal herbs. For generations, from 4000 to 5000 B.C., people have turned to traditional remedies as a cost-effective and easily accessible means of illness treatment. The first known medicinal formulation derived from herbs was acquired by the Chinese. The first text on the use of plants as medicines in India was found in the Rig-Veda, which dates back to 1600-3500 B.C. Traditional Indian medicine has long made use of herbs for their therapeutic properties.[1] New medicinal treatments may be derived from plants.

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The Developability Classification System: Application of Biopharmaceutics Concepts to Formulation Development

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ABSTRACT

A revised classification system for oral drugs was developed using the biopharmamaceutics classification system (BCS) as a starting point. The revised system is designed to have a greater focus on drug developability. Intestinal solubility, the compensatory nature of solubility and permeability in the small intestine and an estimate of the particle size needed to overcome dissolution rate limited absorption were all considered in the revised system. Thesystem was then validated by comparison with literature on the *in vivo* performance of a number of test compounds. Observations on the test compounds were consistent with the revised classification, termed the developability classification system (DCS), showing it to be of greater value in predicting what factors are critical to *invivo* performance than the widely used BCS.

INTRODUCTION

Following its introduction in the 1990s, the biopharmaceutics categorization system (BCS) had a significant impact on the creation of oral dosage forms with instant release (IR). This method replaced in vivo human trials with in vitro data to prove bioequivalence of low risk (BCS class I) chemicals. One, twoFurthermore, the BCS provides a framework for considering critical factors (dosage, solubility, permeability, and dissolution rate) that may impact a drug's efficacy in the body. Beyond identifying biowaiver-friendly medications, these factors likely also characterize the CQAs that affect in vivo effectiveness. When thinking about quality by design (QbD), it is very important to have a good understanding of these when developing oral pharmaceutical items.3Because of the heavy regulatory burden on the BCS, the classification scheme rightfully treads carefully when deciding which product properties, such solubility and/or dissolution rate, are most important for limiting oral absorption. Considering thatTo prioritize patient safety, it is vital to accurately categorize product modifications that cause changes to in vivo performance rather than misclassify those that do not. Permeability is a feature of the drug molecule that is not expected to vary with product and process changes, hence changes to the drug product typically have less of an impact on this attribute. This reduces the likelihood that permeability is associated with a drug's CQAs and makes it easier to identify a theoretical high/low permeability boundary (e.g., permeability equal to 90% fraction absorbed) that is useful for determining whether permeability is partially rate limiting to oral absorption.In rare cases, excipients may affect in vivo permeability by influencing the drug's active or passive transit across the intestinal wall, or indirectly by changing the GI transit/residence duration. While there have been documented cases of this happening, it is rather unusual and usually requires a substantial dose of certain high-risk excipients to cause any noticeable alteration in living organisms.

There have been proposals to expand the biowaiver classes of the BCS.6 Classes III compounds can be exempted from biowaivers as long as changes to excipients won't affect drug permeability.

YIDDISH

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Examination of the rectangle apparatus developed by Asyogh for the purpose of assessing memory and learning in Wistar rats

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Abstract

The purpose of this research was to develop an improved version of Asyogh's rectangle gadget for evaluating rodent memory. Increased transfer latency times shown that rats significantly impaired in memory when administered scopolamine (3 mg/kg i.p.) and diazepam (1 mg/kg i.p.). But when the rats were given Donepezil beforehand, their memory problems disappeared. Thanks to the considerable improvement in TLT, it's clear that pretreatment donepezil may successfully reverse the memory impairments caused by scopolamine and diazepam. This research demonstrated that the device used to detect transfer delay time was an effective instrument for evaluating cognitive function and memory in rats.

keywords: Introducing Asyogh's rectangle device—a groundbreaking tool for assessing learning and memory

Introduction :

Memory is a mental process that includes the brain's encoding, storage, and retrieval of data.Amnesia is the medical term for a loss of memory. Causes of forgetfulness include brain injury, illness, or the side effect of hypnotics or sedatives.According to prior research, the cholinergic system plays an important role in the cognitive processes of living beings.Memory loss caused by a structural lesion or an antagonist at the muscarinic and nicotinic receptors could be the cause of the decreased cholinergic function [3].[4] Animal studies have shown that the anticholinergic medication scopolamine may modulate the cholinergic system, leading to amnesia.Five, six Diazepam causes amnesia in rats, according to the prior research.[7] Currently, there are a plethora of tools tiny creatures.One typical method for studying how rats' brains process painful memories is the passive avoidance test.

History of Medicine Studies

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Method Development and validation on the stability of Lafutidine and domperidone in capsules

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M.Suchitra&K.Sailekhya

Abstract

For the purpose of determining the concentrations of Lafutidine and Domperidone in Lafutidine and Domperidone sustained release capsules, a straightforward, sensitive, accurate, and specific high performance liquid chromatographic technique was created and validated. A mobile phase consisting of a 30:70 ratio of acetonitrile to pH 6.5 phosphate buffer was used to carry out the separation. A UV detector operating at 276 nm was employed with an Xterra column of 250mm X 4.6mm, 5µ, and a flow rate of 1 ml/min. Domperidone had a retention duration of 15.5 minutes and Lafutidine 7.0 minutes. Recovery investigations (mean recovery = 99.94) and statistical validation of analytical data confirmed the degradation research of Lafutidine and Domperidone in capsule form under conditions of hydrolysis, oxidation, heat, and photolysis. The study's results shown that the suggested approach is effective for the routine determination of Lafutidine and Domperidone in pharmaceutical dose form since it is simple, quick, precise, and accurate.

Keywords: Method development, validation, and forced degradation using lafutidine and domperidone.

Introduction

Lafutidineis2-[(2-furylmethyl)sulfinyl]-N-((2Z)-4-{[4-(piperidin-1-ylmethyl)pyridin-2-yl]oxy}but-2-en-1-yl)acetamide(Fig.1).Itisagastroprotectiveandantiulcer drug, which selectively block H2 receptors.Physicalpropertiesarewhitecrystallinepowder,soluble in methanol and freely soluble in glacial aceticacid,stable under ordinarycondition.

Domperidoneis5-chloro-1-(1-[3-(2-oxo-2,3-dihydro-1Hbenzo[d]imidazol1yl)propyl piperidin-4-yl)-1H-benzo[d]imidazol2(3H)-one(Fig.2).Itisanantiemetic drug, which selectively block CTZ receptors.Physicalpropertiesarewhitecrystallinepowder,solublein0.1NHCl.ThispaperdescribesvalidatedHPLCmethodforestimationofLafutidineandDomperidone, a mobile phase consisting Acetonitrile:pH 6.5 phosphate buffer in ratio of 30:70. The columnused was Xterra 250mm X 4.6mm, 5µ with flow rate 1ml/minusingUV detectionat276nm.

Fig.1: Lafutidine

Fig.2:Domperidone

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In Vivo and In Vitro evaluation of Immunomodulatory Potential Of Cassia auriculata Linn's

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Abstract

The current research set out to examine Cassia auriculata Linn's immunomodulatory potential both in vitro and in vivo. The immunomodulatory ability of plant methanol extracts was examined in a number of in-vitro models, as well as in an in-vivo model of oxazolone-induced cell-mediated inflammation in rats. Scientifically, several activity models were used to screen methanolic extracts of roots and flowers. Methanolic floral extract has immunomodulatory activity, as shown by oxazolone-induced cell-mediated inflammation. On the other hand, methanolic floral extract exhibited dose-dependent stimulation in in-vitro immunomodulatory models such as the NBT reduction test using human PMN cells. The phagocytosis of Candida albicans by human PMN was also seen using the same extract. A dose-dependent rise in candidacidal activity was also seen in the methanolic floral extract. The methanolic floral extract showed stronger effects than the positive control in inducing chemotaxis of human PMN cells. This means that methanolic floral extract has an immunostimulant effect in vitro, and it dramatically decreased rat ear edema in a dose-dependent way in an in-vivo investigation of oxazolone-induced delayed type hypersensitivity. Because of its antioxidant capability, the in-vitro tests showed that methanolic floral extract has strong immunomodulatory activity. All things considered, the data shown here suggest that Cassia auriculata has strong immunomodulatory action with its purported cytoprotective benefits. In chronic inflammatory conditions like rheumatoid arthritis, for example, a methanolic floral extract high in flavonoids may be used to lessen the dosage and dose-related toxicities of conventional medications.

Keywords: Cassia auriculata, oxazolone, immunomodulatory, NBT test

Introduction

Wild in central and western India, the evergreen shrub Cassia auriculata Linn.has enormous, brilliant yellow blooms and is a member of the Leguminoseae family. Extreme drought and lengthy water stays were both documented as conditions in which plants not only survived, but also proceeded normally with ontogenetic processes including blooming and fruiting. Accordingly, our findings provided conclusive evidence that plants produce specific secondary metabolites that aid in survival under these stressful conditions. There are a number of things that the Cassia genus is famous for.(1) In traditional medicine, Cassia auriculata has many uses, including alleviating symptoms of chronic purulent ophthalmia, conjunctivitis, diarrhea, cough, asthma, and other conditions.(2) It's suggested for nocturnal emission, sore throat gargling, enemas, rheumatism, eye problems, and urinary disorders and skin ailments.(3) Diarrhea is treated with its decoction, and dysentery is treated with its fresh bark juice. Several species' aqueous extracts showed hypoglycemic effects.(4,5) Cassia auriculata herbal tea, made from dried flowers, is popular in Sri Lanka because to its favorable benefits on diabetes mellitus, constipation, and urinary tract problems. Furthermore, the plant's antibacterial, antiviral, antispasmodic, antioxidant, hypolipidemic, and oral hypoglycemic effects have been studied from a contemporary pharmacological perspective.(10) When exposed to cisplastin and gentamicin, the rat's kidneys were protected by the root's ethanolic extract.(11) Animal studies showed that the water-based seed extract had a hypoglycemic effect.(12) Flavonoids, triterpenoids, kaempferol, β-sitosterol, auricassidin, and anthracene derivatives were among the phytochemicals found in the plant.13) Polysaccharides, tannins, saponins, and flavonoids such as rutin and quercetin.(14) The purpose of this work was to examine the immunomodulatory potential of methanolic extracts of Cassia auriculata flowers and roots, since the literature review indicated that the plant is promising and has shown a broad range of pharmacological activity.

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Experimental Investigation of Hepatoprotective Agents and Antimicrobials for the Management of Liver Disorders: A Cross-Sectional Study

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ABSTRACT

Background: One of the world's leading causes of mortality, liver illnesses have far-reaching repercussions in society, the economy, and medicine. Our primary objective is to raise awareness of liver disease symptoms and consequences while simultaneously decreasing the likelihood of illness and assessing the efficacy of hepatoprotective medicines and antimicrobials. Research Tools and Procedures: This 55-patient cross-sectional research took place over the course of six months in a tertiary care teaching hospital. Information was gathered using the patient profile, a questionnaire, and laboratory testing. The results show that among 55 patients treated between the ages of 40 and 70, the most prevalent types of liver disease were alcoholic liver disease (36.36%), chronic liver disease (34.54%), decompensated liver disease (12.72%), and liver abscess (16.36%). Males (87.27%) and females (12.72%) were the most afflicted. While 14.54% do not drink, 85.45% have a drinking habit. Ascites develops in around 60% of cases. Cephalosporins (78.18%) and ursodeoxycholic acid (80%) are the most often recommended hepatoprotective agents and antibiotics, respectively. In patients treated with hepatoprotective drugs for one week, serum bilirubin, aspartate transaminase, and alanine transaminase levels decreased by 42%, 58%, and 65%, respectively, according to this research. Researchers concluded that alcohol abstinence, in conjunction with antimicrobial and hepatoprotective symptom care, may assist to avert further problems.

Key words: Liver diseases caused by alcohol, liver infections, chronic liver disease, decompensated liver disease, Antibiotics, hepatoprotective medications.

INTRODUCTION

Another name for liver illness is hepatic disease. When the liver's normal functions are impaired, it leads to illness, which is called liver disease. Common symptoms of liver illness include jaundice, swelling, abdominal discomfort, edema, itchy skin, dark urine, pale, bloody, or tar-colored feces, chronic lethargy, nausea, vomiting, anorexia, and an easy bruising propensity.1 Liver disease testing involves looking for signs of liver damage, finding out how bad it is, finding out what caused it, and monitoring the liver's health over time. Laboratory testing includes a complete blood count (CBC), liver tests, and liver biopsies. A few examples of non-laboratory tests include ultrasound, computed tomography, MRI, and magnetic resonance cholangiopancreatography.2 Common medications used to treat liver problems include hepatoprotective medicines, such as silymarin, ursodeoxycholic acid, and Hepamerz. Patients with liver illnesses are at increased risk of infection due to the suppression of immunity; hence, antibiotics are prescribed to treat bacterial infections.3

Alcoholic liver disease (ALD) refers to the liver's damage and dysfunction brought on by drinking too much alcohol. The disease may develop in people who drink alcohol regularly, although the amount of alcohol they drink each day varies widely from person to person.4 The three most common types of alcoholic liver disease are alcoholic cirrhosis, acute alcoholic hepatitis, and alcoholic fatty liver (steatosis).5

The severity of steatosis, also known as alcoholic fatty liver, may vary from moderate inflammation to complete liver failure.6 Heavy alcohol use over an extended period of time (mean intake, around 100g

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Travel medicine - An all-inclusive manual for risk-free global travel

P.Sailaja , Yadala Prapurna Chandra , E.Rajini , K.Sumanth Kumar

In today's globally interconnected world, travel is an essential part of living a modern life. Whether for humanitarian, commercial, or travel-related reasons, millions of people cross international borders daily. It is essential to acknowledge the role of travel medicine in protecting our well-being and improving global health as we eagerly anticipate experiencing other cultures and ecosystems. Travelers are urged to prioritize their health and safety, and the significance of travel medicine is emphasized in this article. Worldwide public health officials have faced difficulties due to the fast proliferation of infectious diseases in the last decade. These include drug-resistant Mycobacterium TB, severe acute respiratory syndrome virus, new strains of influenza virus, and others.Despite this staggering amount, 200 IFMEs occur daily on a worldwide scale, with one major IFME affecting every 10-40,000 passengers and around 0.35 deaths per million arriving passengers each year. [2] About 67% of IFMEs are due to previous medical conditions, which is increasing as the population ages and more people reach retirement age.the third Travelers serve as early warning systems for infectious illnesses, but they also pose a threat of spreading diseases that often manifest in developing nations. Clinics that specialize in tropical medicine and travel medicine are the best sites to detect novel infections and monitor evolving trends in travel-relatedillnesses.1,3

Medicines for Traveling to Other Continents or Vaccinations

Geographical monitoring of travel-related disorders is conducted by GeoSentinel sites, which are specialist travel medicine clinics spread across six continents. In a study of over 17,000 ill tourists, GeoSentinel found many global health risks, including typhoid in South Asia, dengue in the Caribbean, Central America, and Southeast Asia, and African tick-typhus in Southern Africa.[4]

Flu Colored Yellow

The mosquito-borne virus known as yellow fever is native to the tropics and subtropics of Africa and South America. Infectious illness vectors mostly include Aedes and Haemagogus mosquitoes. Evidence of the illness may be found by tests, symptoms, a history of immunization, contact with infected mosquitoes, and travel to an endemic area. In severe cases, fluids and aggressive supportive care are required, but there is no permanent therapy. A safe and highly efficient live-attenuated vaccine, namely the YF 17D immunization, may prevent yellow fever. In only 30 days, 99% of patients will feel the effects of the treatment,and the immunity will last a lifetime.[5]

Prescribed Medications for Regular Travelers

If a healthy tourist is planning to visit a region known to have a high prevalence of certain health risks, they should consult with local medical professionals and take certain precautions before setting out on their journey. Travelers in good health should check that their routine vaccines are up-to-date and consider receiving extra injections if necessary, depending on their destination. Vaccines against influenza, typhoid, tetanus, diphtheria, hepatitis A and B, and t. Rabies, Japanese encephalitis, and yellow fever vaccines may also be recommended, albeit this depends on your destination. Travel medical professionals are qualified to provide guidance and suggestions for vacationers' safety and well-being, regardless of their general health.[6]

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Research article

Nano-sized Liposomes for nose to brain delivery of Carmustine Formulation, Optimization by Box Behnken design

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ABSTRACT

Successful treatment of glioma remains a hard challenge. This study aims at the development and assessment of nano sized liposomal vesicles (NSL) loaded with Carmustine (CS) for the treatment of glioma. The experimental NSLs were developed by conventional lipid layer hydration technique and were characterized by different parameters such as % Entrapment efficiency, zeta potential, scanning electron microscopy (SEM), transmission electron microscopy (TEM), *in vitro* drug release study. The optimized Carmustine nanosized liposomes (OCS-NSLs) presented the practical values of % EE of CS is 94.27 ± 0.25%, particle size of 235.65 ± 12.87 nm and *in vitro* drug release of CS 97.089 ± 1.76%. On the base of the polynomial equation, it was resolved that as the total lipid to drug concentration increases, the % EE of optimized formulation and this leads to more space for the accommodation of drug particle, likewise addition of lipid content as well reduces the escaping of drug into the external phase. OCS-NSLs were spherical in shape with a smooth surface as depicted from SEM data. A TEM study confirmed formation of vesicles with intact outer bilayer. *In vitro* drug release of 95.67± 1.54% was reported for the OCS-NSLs along with a sustained release of CS over a 24 h study period with desired kinetic values. Hence, the optimized formulation has shown a better response on Carmustine loaded nano liposomal formulation for intranasal application.

Keywords: Carmustine, Glioma, Nanosized lipid vesicles. New drug delivery, CNS.

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INTRODUCTION

Glioma is the primary cerebral tumour. It is the most destructive type of tumour among humans. Patients with glioblastoma (GB) have a survival rate of 8 to 14 months after diagnosis [1]. Surgery, chemo and radiation therapy are available in GB. A challenge in the treatment of glioma is the blood-brain barrier (BBB), which consists of tight specialist and endothelial junctions lining the central nervous system. It is proposed that many drug molecules are effective in treating brain tumours but failin clinical trials. This is due to the inability to enter the blood-brain barrier (BB). Therefore, there is a need for improved drug administration strategies [2-4].

In certain cases, oral route fails to deliver the therapeutic amount of drug to brain due to the presence of certain interfaces like blood–brain barrier (BBB), blood–cerebrospinal fluid barrier (BCSFB) and efflux transporters (AET) [5]. These barriers control the exchange between the peripheral blood flow and the cerebrospinal fluid circulatory system (CSF). Other factors, such as the physicochemical properties of the drug, also interfere with central nervous system (CNS) administration [6]. Therefore, several approaches like BBB disruption, drug manipulation and alternative route of drug administration like intra cerebral ventricular, intrathecal and olfactory pathways (intranasal route) are being used for targeting of drugs to the brain [7]. In the present scenario, the intranasal route to bypass the BBB is an upcoming field, as this route caters a novel, practical, simple and non-invasive approach to bypass the BBB and reduce the systemic exposure and thus systemic side-effects associated with drug [8]. Drug after intranasal administration reaches the olfactory epithelium region of the nasal mucosa that acts as a gateway for substances entering the CNS due to the neural connection between the nasal mucosa and the brain [9].

Carmustine (CS) has recently been used as a drug to treat glioma [10-12]. However, it has been restricted as a result of side effects such as bone marrow suppression [13] and pulmonary fibrosis [14]. To reduce toxicity, gliadel wafers [15] were impregnated with CS. These gliadel wafers were not successful as they do not show effective therapeutic efficacy due to poor penetration, inability to prevent tumor recurrence, lack of synergistic action with other

Original Article

Isolation Of Anti-Inflammatory And Anti-Diabetic Principles From The Leaf Extract Of Premna Tomentosa

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Abstract

Diabetes and inflammation are most common and inter related disorders that damage human organs like liver, cardiovascular system, nervous system and urinary system which result in temporary and permanent disability to human beings. Inspite of the efficacy of existing drugs that contain both anti-inflammatory and antidiabetic potential there are significant side-effects too. Thus interest to identify drugs form herbal origin to effectively treat both the disorders simultaneously. Therefore this research focusses on isolating and identifying active chemical constituents from Premna tomentosa leaves. Dried leaves were extracted using methanol and further fractionation was performed in column chromatography using dichloromethane and ethanol as mobile phase. 9 fractions were eluted which were tested for invitro cytotoxicity, anti-inflammatory activity against LPS induced inflammation in RAW 264.7 macrophage cell lines and inhibition of α-amylase. Fractions found to inhibit the toxicity of LPS on cell lines at 25 µg/mL. out of the fractions tested, Fraction 7 and 8 showed the highest activity with % cell viability of 99.651±1.001 and 95.362±0.994 respectively by inhibiting LPS. Fraction 7 and 8 showed the best inhibition at IC_{50} of 280.387 and 265.411 respectively. Fraction 7 resulted best activity in all the activities which was further fractionated using dichloromethane, chloroform and ethanol. Isolate 2 showed the best inhibition with IC_{50} of 292.376. out of the isolates from Isolate 2, Isolate 2a showed a least IC_{50} of 286.356 which infers best inhibition on α-amylase. Isolate 2a was confirmed to contain single compound through HPTLC estimation that showed best activity in all the assays.

Keywords: anti-inflammatory activity, anti-diabetic activity, Premna, RAW cell lines

INTRODUCTION

Diabetes is a complex metabolic condition that affects how the body processes glucose. The major clinical and diagnostic signs of absolute or relative insulin insufficiency or insulin resistance are impaired glucose tolerance and hyperglycemia (Inzucchi, 2013). Diabetes-related chronic hyperglycemia can cause end organ malfunction and failure, including damage to the blood vessels, kidneys, neurons, retina, and kidneys. Diabetes considerably increases a patient's risk for cardiovascular disease (CVD), which is a well-established clinical link between diabetes and atherosclerotic cardiovascular disease (Gregg et al., 2014).

Ageing, ethnicity, and genetic predisposition are risk factors for diabetes that cannot be changed, but others, like being overweight or obese, eating poorly, getting insufficient exercise, and smoking can be modified. However, mounting research indicates that, when the aforementioned risk factors stimulate inflammatory pathways, these pathways serve as the primary, shared pathogenetic mediators in the development of diabetes (Shoelson et al., 2006).

Regarding the minimum age of the onset of diabetes, especially T1DM, the intensity of the autoimmune response, and the effectiveness of therapy, it exhibits great variability. It has also been shown that both humoral and cellular immunity are implicated in the pathogenesis of diabetes. Inflammation plays a part in diabetes mellitus (DM), and it is present in the beta cell pancreatic islets of diabetic individuals. The development of autoreactive T cells in the periphery of non-obese mice with diabetes is caused by failure in both central and peripheral immunological tolerance mechanisms (Anderson and Bluestone, 2005). Additionally, research showing that the PTPN2 gene's

FORMULATION OF ZIDOVUDINE PRONIOSOMES FOR ORAL DRUG DELIVERY SYSTEM

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ABSTRACT:

Drugs regularly used for the management of the retroviral infection mostly exist as conventional dosage forms. The main short coming of these dosage forms are non specific or non targeting delivery of the drug in the site of action. Drug delivery systems by means of colloidal particulate carriers such as liposomes, niosomes have distinct advantages over conventional dosage forms because the particles can act as drug containing reservoirs, and modification of the particle composition or surface can adjust the drug release rate and/or the affinity for the target site. **Aim**

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SYNTHESIS OF CHITOSAN BASED NANOPARTICLES AND EFFICACY OF CORTICOSTEROIDS AND AMINOSALICYLATES FOR THE TREATMENT OF INFLAMMATORY BOWEL DISEASE

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ABSTRACT

Nanoparticles were considered as the revolutionized drug delivery system besides conventional drug delivery. Nanoparticles prepared with chitosan were found to be biodegradable and biocompatible with low toxicity which made chitosan as a valuable tool to manipulate the molecules and their structures. Chitosan nanoparticles can be delivered through parenteral and per-oral routes that offer a valuable tool for novel targeted drug delivery systems.Chronic inflammation of gastro intestinal tract due to inflammatory bowel disease was frequently occurred in young people. Anti-inflammatory drugs suppress the intestinal inflammatory burden with limited therapeutic efficacy by developing adverse drug reactions. Thus, the drugs have been targeted using novel drug delivery strategies for elevated therapeutic efficacy by diminishing adverse drug reactions. The efficacy of corticosteroids and aminosalicylates were explained using many randomized trials from 4 to 5 decades that continued till today. The review summarizes the structure and properties of chitosan, methods for production of chitosannanoparticles and efficacy of corticosteroids and aminosalicylates in the treatment of Inflammatory Bowel Disease.

Key Words:

Chitosan nanoparticles, Corticosteriods, Aminosalicylates, Ulcerative colitis, Crohn's disease.

1. INTRODUCTION:

1.1 Brief perception on Inflammatory Bowel Disease (IBD):

IBD is collectively called as Crohn's Disease (CD) and Ulcerative Colitis (UC) which was characterized as chronic inflammatory disease of gastro intestinal tract. IBD is very common in western countries with 1.4 million people affected in United States and 2.2

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Role of the Extracellular Matrix Components in Cutaneous Wound Healing

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ABSTRACT

Anti-inflammatory seems to be the metabolic rebuttal of between cells wounds progressing like a sophisticated continuum sure biochemical processes but instead epithelial occurrences, naturally produced progenitor cells, but rather pro inflammatory cytokines. Collagen fibres electorate seem to be vital aspects of such bone healing sociological phenomena. So first, individuals establish someone temporary residency mixture that provides some one sturdiness sure multiversity throughout every step yeah healing time. Secondly, structure particles govern cell function, resolve that whole device but instead cell-matrix connections, and function positive water supply or modulated signal like chemokines or gene products' response. Previously available methods, whereby the stoma ingredients modify also every stage of production of sentimental vasculature major renovation because once serious injuries, have really been talked.

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INTRODUCTION

Wound is just a complex, biological method that either troubles going to replace cell damage by such a currently residing another [1–3]. A regeneration anyway epithelium truthfulness is really the results of that whole conversation of proteins, cell lines, including such phagocyte, monocyte/macrophages, fibronectin, cellular membranes, but also megakaryocytic along with extracellular matrix (ECM) elements, such like fibroblast, study, research has described, thrombospondins, tenascin, vitronectin, and company provides [4]. Its noted organelle communication as well as the cytoskeleton elements does seem to be particular topic to the regulatory like physio chemical facilitators, countless pro inflammatory cytokines, but also progenitor cells, like arachidonic acid credit default swaps (prostaglandins but rather leukotrienes), assessing the effect, interferon's, TNF-α, associated protein, transcription factors, transforming growth factor, as well as growth factor [5]. The first of cited phytoconstituents takes part along attempting to create this same inflammatory, while everyone else, that seems to be, progenitor cells, actually participate such as trying to control emergence, distinction, as well as mitochondrial after all bacteria engaged there in healing. Latter peacekeepers help out restricting pro-inflammatory cytokines or enjoy one chemokines position such as phagocyte, monocytes/macrophages, fibres, as well as epithelium (keratinocytes) energizing a neurotrophic as

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FORMULATION & *IN-VITRO* EVALUATION OF SUSTAINED RELEASE TABLETS OF FROVATRIPTAN FOR THE TREATMENT OF MIGRAINE

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REVIEW ARTICLE

Recent advancement in Nano-drug delivery for Topical Wound Healing

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ABSTRACT:

Advanced technology is needed for quicker and better wound healing management by minimizing infection, keeping moisturizing the wound surface, speeding up tissue growth, and reducing infection at the specific area. The advancement of drug delivery in nano form is gradually increasing and shows a greater response towards healing wounds. The drug's in nano shape potential to hold the drug and facilitate rapid targeted effect in tissue growth and repair. Research outcomes confirm that shortcomings of the traditional form of dosage may be revived by nanomedicine because of its better target-specific application for wound treatment. The present analysis concentrated on further growth and applicants for medications in nano form targeting to accelerate healing of wound treatments for a different wound style. The latest development in nanomedicine has been created by different researchers in the shape of nanoparticles, niosomes, dendrimers, nanosomes, hydrogels, liposomes, and micelles, etc. which emphasize clinical value and provide better therapeutic benefits. Past few years significant development has been observed on nanomedicines to satisfy the clinical needs for chronic and wounds that are diabetic. The occurrence of wounds nonhealing gradually increasing which affects the patient mentally and financially. This current review article summarized with latest developments within the area of nanomedicine, which dramatically expanded its clinical value towards wound healing.

KEYWORDS:. Inflammation, Wound Healing, Cell Proliferation, Nanomedicine, Liposomes, Niosomes.

INTRODUCTION:

Skin needs special attention and is considered the largest organ of the body. The skin covers our body and protect us from microbial attack and also helps in maintaining the temperature and fluid balance in the body. Wounds and burns can be major causes of destroying this barrier and seek the attention of the clinician as a terrific health challenge. Chronic and wounds that are nonhealing create physical disability[1] which could disrupt functional continuity and anatomical structure of the injured cells at the sites of injury. "Wound leads to gangrene or septic it may be a cause of patient death"[2].

Wound healing or repair is a dynamic mechanism in which overlapping phases or inflammation, remodeling cellular proliferation are arranged more slowly to recommence their normal function[3]. The wound healing starts immediately within zero to 1 hour, or 1 to 24 hours, intermediate time taking such as 1 to 7 days, late healing time more than 7 days, and not heal more than 3 months. The successful wound healing steps are skin refutation, scab development, contraction of a wound, debridement of the wound, wound proliferation, fibroplasia, and collagen creation. Recent updates confirm that approximately 84% (number one cause) of diabetic patients were hospitalized due to foot ulcer issues[4]. First, lifestyle (including smoking and alcoholism) and the age group of the subjects have an immense impact on wound closure (10-14 days). Furthermore, other variables that can hinder wound healing are health disorders of the patient, such as high cholesterol, diabetes, peripheral arterial disease, Ehlers-"Danlos syndrome, Cutis Laxa, hypothyroidism, homocystinuria, and advanced stage of the disease"[5].

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Chapter 1
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Development of an Analytical Method and Validation of Exemestane Tablet by UV Spectrophotometry

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ABSTRACT

This chapter discusses the development and validation of a UV spectrophotometric method for the estimation of Exemestane tablets. The determination of exemestane in tablet dosage form has been created using a straightforward, accurate, and economical spectrophotometric approach. The ideal circumstances for the drug's analysis were developed. The maximum wavelength (λ max) was found to be 246 nm. The percentage recovery of Exemestane was noticed to be 98.7±0.4. Beers law was obeyed in the concentration range of 2-14 µg/mL. The absorbance and concentration have a linear relationship, according to calibration curves. The line equation y=0.05954x+0.0000 with r^2 of 0.9938 was obtained. Validation was carried out in accordance with ICH guidelines for linearity, accuracy, precision, LOD, and LOQ. The sample solution was stable for 36 hours. The suggested technique may be appropriate for the study of Exemestane in tablet formulation for quality control purposes.

Keywords: Exemestane; UV method; validation; ICH guidelines.

1. INTRODUCTION

Aromatase is one of the first molecular targets identified for rational drug development in cancer treatment [1]. Aromatase is found in breast tissue, and intratumoral aromatase is the source of local estrogen production in breast cancer tissues. Inhibition of aromatase is an important approach for reducing growth–stimulatory effects of estrogents in estrogen dependent breast cancer. In

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PREPARATION AND IN-VITRO EVALUATION OF SODIUM ALGINATE MICROSPHERES LOADED WITH SAXAGLIPTIN

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Abstract:

In the present study it was aimed to formulate sustained release saxagliptin microspheres, Microspheres occupied a central place in novel drug delivery, it can target, and localized drug delivery system. Microspheres reduce oral administration side effects such as gastric irritation in stomach. A promising method for controlled release and medicine targeting is the development of microspheres. Microspheres come in a variety of forms, including bio-adhesive, magnetic, floating, radioactive, and polymeric microspheres. Saxagliptin microspheres were formulated using sodium alginate as the controlled release polymer by inotropic gelation technique. The polymer Sodium alginate along with different polymers like HPMC, Carbopol and Ethyl cellulose was used in different ratios (1:1, 1:2, and 1:3) to formulate batches from F1to F9. The resulting micro particles were evaluated for particle size, densities, flow properties,morphology,recovery yield, drug content, drug entrapment efficiency and in vitro studies. The drug entrapment efficiency obtained in the range 95.02 to 98.71.Among different formulations, the fabricated microspheres of batch F6 had shown the optimum percent drug encapsulation of microspheres and the sustained release of the saxagliptin for about 12h. An in vitro investigation revealed that as the pH of the medium rises, medication release gradually increases. release pattern of saxagliptin from microspheres of batch F6 followed Higuchi model and Zero order release kinetic model.The value of n was found to be 1.155. The data obtained thus suggest that the microparticulate system can be successfully designed for sustained delivery of saxagliptin and to improve dosage form characteristics for easy formulations.

Key words: Microspheres, saxagliptin, inotropic gelation, sodium alginate and Carbopol.

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PREPARATION AND EVALUATION OF VIGABATRIN MICROSPHERES MICROSPHERES LOADED WITH SAXAGLIPTIN

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ABSTRACT

Microspheres drug delivery system have used to improve patient compliance,decrease toxicity and increase efficacy. also, the use of microspheres to deliverthe drugs has manyother standards, like manage medication release, improve bioavailability, and direct drug delivery to the desired site. Microsphereformulations have advantage over conventional tablet or capsule formulations, since it increases the surface area exposed to the drug's absorption location, resulting in increased drug absorption and decreased drug dosage persistency.in this research work an effort was made to formulate microspheres of vigabatrin by using different natural polymers, in the ratios of (1:1,1:2,1:3),Vigabatrin is an Anti-Epileptic or Anti-Convulsant drug used to treat epilepsy and infantile spasms Vigabatrin is thought to work by stabilizing the electrical activity in your brain and calming it.prepared formulations are characterized for FTIR study, flow properties," critical angle of repose,tapped density,bulk density,hausner ratio,cars index (14.58±2.78)". yield of percentage (96.92), percentage of drug entrapment(97.58), theoretical drug content, practical drug content (97.28), in-vitro dissolution, kinetics of drug. formulation which passes all the evaluation parameters was considered as best formulation of vigabatrin.

Keywords:

Microsphere, ionotropic gelation, vigabatrin, microencapsulation, karaya gum.

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Filter-Grown Caco-2 Cell Proteome: A Special Emphasis on Drug Disposition Proteins

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Abstract

Research on the physiology of intestinal cells and drug transport often makes use of Caco-2 cells. Here, we compared the proteomes of the human colon and jejunum with those of filter-grown Caco-2 cells by quantifying their global proteome using the total protein technique. We found 8096 proteins in all. Extensive research on proteins that regulate enterocyte differentiation—such as integrin, adherens and tight junctions, and brush-border hydrolases—provided almost exhaustive coverage of the predicted proteins. One hundred twelve solute carriers and twenty ATP-binding cassette transporters were among the 327 proteins found to be involved in absorption, distribution, metabolism, and excretion. The levels of OATP2B1 were sixteen times more in Caco-2 cells compared to jejunum. At clinically relevant intestine concentrations, OATP2B1 accounted for 60%-70% of the uptake kinetics of pitavastatin, an OATP2B1 substrate, in Caco-2 monolayers. We aimed to understand how this discrepancy affected in vitro-in vivo extrapolations. Together, pitavastatin kinetics and transporter concentrations were used to simulate the role of active transport and membrane penetration in the jejunum. Pitavastatin absorption in vivo is mostly mediated via transmembrane diffusion, as shown by the much decreased transporter contribution (<5%) caused by the lower OATP2B1 expression in the jejunum. Finally, we provide the first comprehensive quantification of the filter-grown Caco-2 proteome. To correctly interpret drug transport pathways in the human gut, we also show that transporter expression levels are very important.

Introduction

The colon cancer in humans Pogh et al. were the first to isolate the Caco-2 cell line.1 In their publication on the spontaneous differentiation of filter-grown Caco-2 monolayers to an enterocyte-like phenotype, Zweibaum et al. presented the use of this cell type for investigations of the physiology of epithelial cells.2,3 Because of this, researchers in the pharmaceutical industry were able to use this cell line to examine how solutes are transported and absorbed.4–7 in Using Caco-2 cells, Borchardt and Wilson were the pioneers in studying active transport mechanisms, such as bile transfer.

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The Proteome of Filter-Grown Caco-2 Cells With a Focus on Proteins Involved in Drug Disposition

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Abstract

Research on the physiology of intestinal cells and drug transport often makes use of Caco-2 cells. In this study, the total protein technique was used to quantify the global proteome of filter-grown Caco-2 cells. The results were compared with proteomes from the human colon and jejunum. There were a total of 8096 proteins found. Thorough examination of proteins that characterize enterocyte development, such as adherence and tight junctions, integrins, and brush-border hydrolases, provided almost exhaustive coverage of the anticipated proteins. Out of the 327 proteins that were found, 112 were solute carriers and 20 were ATP-binding cassette transporters; these proteins were involved in absorption, distribution, metabolism, and excretion. The levels of OATP2B1 were sixteen times more in Caco-2 cells compared to jejunum. At clinically relevant intestine concentrations, OATP2B1 accounted for 60%-70% of the uptake kinetics of pita vastatin, an OATP2B1 substrate, in Caco-2 monolayers. We aimed to understand how this discrepancy affected in vitro-in vivo extrapolations. Together, pita vastatin kinetics and transporter concentrations were used to simulate the role of active transport and membrane penetration in the jejunum. Pita vastatin absorption in vivo is mostly mediated via transmembrane diffusion, as shown by the much decreased transporter contribution (<5%) caused by the lower OATP2B1 expression in the jejunum. The first comprehensive measurement of the Caco-2 proteome produced in a filter has been presented here. To correctly interpret drug transport pathways in the human gut, we also show that transporter expression levels are very important.

Introduction

The human colon carcinoma Caco-2 cell line was originally iso-lated by Fogh et al.[1]Weisbaum et al. introduced the use of filter-grown Caco-2 monolayers for studies of epithelial cell physiologyand reported on its spontaneous differentiation to an enterocyte-like phenotype.[2,3]This paved the way for scientists in the pharmaceutical

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The effectiveness of injectable ossotide in treating condylar fractures

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Abstract:

The purpose of this study was to evaluate the effects of osteopeptide injections as an additional treatment for condylar fractures on pain management and changes in levels of interleukin-1α (IL-1в) and bone glycoprotein (BGP). Eighty-two patients who had a condylar neck fracture were divided into two groups at random. While the control group underwent standard surgical procedures, the experimental group also got injections of osteopeptide. The levels of pain, IL-1, and BGP were assessed at 1, 2, and 4 weeks after surgery.

TWO WEEKS AFTER SURGERY: The experimental group outperformed the control group on the Numeric Rating Scale. The control group had greater BGP levels and lower IL-1β levels at all three assessment points (1, 2, and 4 weeks postsurgery), whereas patients who received osteopeptide injections had higher BGP levels and statistically significant differences ($P < 0.05$) in both.

CONCLUSIONS: Patients with condylar fractures may have a reduction in pain and a speedier start to muscular function training after receiving osteopeptide injections as an adjuvant treatment. Faster wound healing is another benefit of reducing inflammatory factors and increasing active osteogenesis.

Keywords: Ossotide for injection, numerical rating scale score, condylar fracture, interleukin-1α, and bone G-gla protein

Introduction

One portion of the maxillofacial region that is susceptible to fracture is the condyle. Condylar fracture diagnostic and treatment strategies need to evolve with new medicines, materials, imaging technologies, and treatment modalities. To avoid or address any complications after surgery, it is essential to manage the patient's pain and improve tissue healing. The clinical effectiveness of administering osteopeptide injections as an adjuvant therapy for condylar fractures was evaluated in this research.

Materials and Methods

In 2020 and 2022, we used a random number table to split 82 patients admitted to our hospital with condylar fractures into two groups. The patients' numbers were determined using the website http://powerandsamplesize.com. The experimental group included a total of 41 people, with ages ranging from 20 to 61 years old, and an average age of 33.54 ± 5.12 years. The group included 20 males and 21 females. The age range of the 41 patients that made up the control group was from 23 to 62 years old, and there were 22 males and 19 females. The average age was 34.11 ± 4.45 years. Patients gave their informed permission after receiving detailed information about the trial's treatment plans, objectives, risks, and outcomes. As a component

Below are the requirements: Surgical reduction and fixation may be necessary to treat a condylar neck fracture. In cases when surgery is not done, intracondylar fractures, subcondylar fractures, comminuted condylar fractures, and high fractures (defined as lines on the surface of the condyle) are not considered. The patients in the control group had standard surgical procedures, including middle and low condyle fractures.[1] The condylar neck fractures that were chosen for this research are all in the middle or low range of the fracture spectrum. For improved fixation stability, a titanium plate and bicortical screw can be inserted through an intraoral incision, a posterior mandibular incision, or a submandibular incision (with endoscope assistance). Following this,

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Cyclin-dependent kinases anti cancer treatment for Humans

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Abstract

Cancer is characterized by unchecked growth and aberrant control of the cell cycle. When it comes to regulating cell proliferation and the cell cycle, CDK is crucial. For the CDK family, CDK2 is the "superstar" member.ThecyclinA complex needs phosphorylation to go through the S phase of the cell cycle, while cyclin E is required to get from G1 to S phase, both of which are components of the CDK2 complex. The CDK2 inhibitor binding mechanism and the binding mechanism modifications caused by CDK2 conformational variations are also compared. In light of this, it should be feasible to block or disrupt the CDK2/cyclin complexes in order to decrease the hyperactivation of CDK2 and halt the endless cell growth. A CDK inhibitor mostly binds to one of four primary sites. There are three types of binding sites: competitive (site 1), noncompetitive (sites 2 and 3), and allosteric (site 4). Cancers such as leukemia, melanoma, solid tumors, and others are primarily treated with CDK inhibitors.

Keywords: Cancer,CDK,CDK2,CDK2Inhibitors

Introduction

The most crucial kinases for regulating the cell cycle and facilitating its transition between its many stages are cyclin dependent kinases. Cancer in humans is caused by an overactive cell cycle that involves several genes; when these genes are inhibited, two processes—cell cycle arrest and apoptosis—occur. The specialized targeting of cancer to unique CDK inhibitory processes is based on the fact that various CDKs have diverse activities in the cell cycle process.

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Method

1. **CyclinDependentKinases:Fromcellcyclecontr**

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In both healthy and diabetic rats, Pistia stratiotes showed renoprotective effects in ischemia reperfusion damage models.

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Abstract

: Pistia stratiotes (PS) has a long history of usage in preventing oxidative and inflammatory bursts, which are significant components of renal reperfusion injury (RI/R). Reports indicate that it may reduce cholesterol levels as well as blood sugar levels. Therefore, this research set out to demonstrate how PS altered renal reperfusion injury in rats with diabetes and those without the disease.

DATA AND PROCEDURES:

Each rat suffered 30 minutes of renal ischemia (RI) and then had 1 hour to recover in the experiment. For seven days before to the experiment, the animals were administered PS at a dose of 100 mg/kg orally. We then assessed the antioxidant, inflammatory, and histological effects using the mixture derived from the kidney tissues that had been separated.The results showed that diabetic rats fed PS had reduced levels of certain urine enzymes compared to RI/R rats, including aspartate aminotransferase, blood urea nitrogen, creatinine, myeloperoxidase, C-reactive protein, and tumor necrosis factor-alpha.Conclusion: PS may have protected hyperglycemic animals against RI/R. The fact that PS protected the test rats' kidneys might be because of its anti-inflammatory, blood sugar-lowering, and free radical-fighting properties.

Relevant Terms: Pistia stratiotes, renoprotective, injury, ischemia, reperfusion

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Understanding Australian Pharmacists' Perceptions on the Utilisation of Oral 5-HT3Antagonists as Pharmacist-Only Anti-Emetics in Comparison to Oral D2 Antagonists

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Abstract

Objectives: To investigate the perception of community pharmacists on the down-scheduling of 5-HT3 antagonists to pharmacist-only-medicine for treatment of acute nausea and/or vomiting in Australia. Methods: A nationwide anonymous survey targeting Australian community pharmacists was conducted from April to May 2023. Responses were collected and analysed quantitively or qualitatively, where appropriate. Key findings: Participants reported that 5-HT3 antagonists were effective at treating nausea and/or vomiting and would likely recommend their use. Training is required to manage supply due to concerns related to their side effects. Conclusion: Participants supported down-scheduling of 5-HT3 antagonists for the treatment of nausea and/or vomiting in Australia. A pilot study on the provision of 5-HT3 antagonists by pharmacists is recommended as is the development of guidelines for pharmacist-only supply before down-scheduling is considered.

Keywords

community pharmacists, schedule 3 medicines, nausea and/or vomiting, 5-HT3 antagonists, D2 antagonists

Introduction

Community pharmacists in Australia play an integral role in diagnosing and providing symptomatic relief of nausea and/or vomiting (N/V).[1] Supply of anti-emetics by pharmacists is currently limited by scheduling of medications by the Ther- apeutic Goods Administration (TGA). In Australia, serotonin (5-HT3) antagonists, such as ondansetron (administered orally or via injection) and granisetron (administered orally or via injection) are prescription-only-medications (Schedule 4, S4).[2,3] Dopamine (D2) antagonists, such as prochlorperazine (administered orally) are pharmacist-only-medications (Schedule 3, S3) and may be supplied over the counter (OTC) specifically for the treatment of nausea associated with migraine[2] (Supplementary material S1).

Down-scheduling 5-HT3 antagonists to S3 pharmacist- only-medications may provide additional options for pharma-cists to consider when treating N/V. Presently, the perceptions ofpharmacists on the down-scheduling of 5-HT3 antagonists is limited. This study aimed to gather community pharmacists' perceptions on the down-scheduling of oral 5-HT3 antagonists to S3, specifically regarding their opinions on their efficacy and safety and to determine if they possess the knowledge and training to safely provide them.

Methods

An anonymous survey (developed using Qualtrics and ac-cessible via QR code) was disseminated via social media and the research team's personal network (including direct email to 51 pharmacies in South Australia) during April and May of 2023. Participants were required to be (i) at least 18 years old,
(ii) a pharmacist registered with the Australian Health Prac- titioner Regulation Agency, and (iii) practicing as a com- munity pharmacist.

Participants responded to short-answer and Likert scale multiple-choice questions regarding the safety and efficacy of

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A traveler's medical manual for a worry-free journey across the globe

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Abstract

Because of how interconnected the world is now, travel is more important than ever. Whether for humanitarian, commercial, or travel-related reasons, millions of people cross international borders daily. It is essential to acknowledge the role of travel medicine in protecting our well-being and improving global health as we eagerly anticipate experiencing other cultures and ecosystems. Travelers are urged to prioritize their health and safety, and the significance of travel medicine is emphasized in this article.

Public health professionals throughout the world have faced difficulties due to the fast worldwide spread of diseases including drug-resistant Mycobacterium TB, severe acute respiratory syndrome virus, and new strains of influenza virus in the last decade.[1] Regardless of this staggering amount, there are 200 IFMEs per day on a worldwide scale, one major IFME for every 10-40,000 passengers, and around 0.35 deaths per million arriving passengers every year.Preexisting medical conditions cause around 67% of IFMEs, which is a growing concern due to the aging population.[3] While travelers may help discover infectious illnesses early on, they also pose a threat of spreading diseases that often manifest in developing nations. Specializing travel and tropical medicine clinics are the best sites to detect novel infections and monitor shifting trends in travel-related disorders.From 1 to 3,Medicines for Traveling to Other Continents or Vaccinations

Specialist travel medicine clinics known as GeoSentinel sites collect data on travel-related disorders via clinician-based monitoring on six different continents. The following global health risks were discovered in a GeoSentinel investigation of approximately 17,000 ill visitors: typhoid from South Asia, dengue from the Caribbean, Central America, and SE Asia, and African tick-typhus from Southern Africa.[4]

Symptoms of Yellow Fever

The mosquito-borne disease known as yellow fever is prevalent in the tropics and subtropics of Africa and South America. The illness is mostly transmitted by mosquitoes of the species Aedes and Haemagogus. Past travel to an endemic area, encounter with infected mosquitoes, immunization history, symptoms, and diagnosis are the main criteria for determining the illness.

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Original Research Article

Mupirocin Loaded Niosomal Gel for Topical Wound Healing Applications

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ABSTRACT

Mupirocin-loaded niosomal gel has been developed to enhance the drug deposition for a longer period at the targeted site and sustained the rate of release of the drug. A lipid hydration technique was employed to formulate niosome with polymers Carbopol and Chitosan at various concentrations. Tween 80 is a non-ionic surfactant utilized in the formulation to improve the entrapment efficiency of the drug. Cholesterol is utilized in the formulation to improve vesicle stability and glycerin is a gelling and moistening agent. In addition, to improve the stability of the niosomal gel Methylparaben is also added to the formulation.FTIR and DSC studies are used to find out the compatibility study of the drug and other excipients. The post-evaluation studies confirm that yield percentage lies between 85 - 93%, entrapment efficiency 83 - 97%, drug content lies within the limit of 87 – 98%, pH range matches the skin pH and the obtained range is 6.25 - 7.3. Viscosity and Spreadability show the result within the limit of 410 - 560 cps and 3.8 - 5.4 g cm/s respectively. The post-evaluation study was further subjected to an in-vitro diffusion study. The formulation F5 has shown a better sustained release of active drug (98% at 12hr) which contains a higher ratio of carbopol and tween 80. A higher concentration of tween 80 increases the entrapment efficiency of mupirocin in the niosome and carbopol helps to sustain the release rate to an optimum period as a swellable gelling agent.

Keywords: Wound healing, Nanomedicine, Niosomes, Mupirocin gel.

Introduction

A general wound can be healed by a natural process of tissue growth but in the case of chronic or non-healing wounds need more attention and effort to heal. In the case of diabetic patients wound healing is very tedious and painful. Wound healing depends upon numerous factors such as blood supply to the wound area, condition of the skin, wounded body parts, types of nutrition intake, etc. Advanced wound care systems replace commercially available medicine and suggest clinicians use nanomedicine for better treatment. In recent years, researchers bring this nano-technology for the improvement of commercially available medicine and bandages. Nano-technology helps to achieve targeted drug delivery, reduce toxicity, and provide better treatment by sustaining the release rate of active drugs.[1,2] In this regard, a unique technology like niosomes has been considered in this current study.

Similar to liposomes, niosomes are multilamellar vesicular structure [3,4] containing nonionic surfactants that can entrap together hydrophilic and hydrophobic, antigens and hormonal drugs.[5,6] Niosome can be prepared by using various types of non-ionic surfactants to form a vesicle to entrap the active drugs in it. [7-9] The drug was loaded to the vesicle at a minimum concentration to produce fewer side effects and stability and modified the release pattern.[10]

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The non–ionic surfactants and the additive cholesterol together help to form a bilayer membrane and improve drug permeability and solubility.[11-13] Niosome as a carrier protects the drug from unwanted immunological effects, rapid degradation, and instability.[14,15] In addition, it aids in the medication's retention in the targeted location for a longer period and helps the active components' penetration of the skin surface.

Mupirocin is a topical antibiotic used in the treatment of infection. A wide variety of gram-positive and gram-negative bacteria (*Staphylococcus aureus, Streptococcus, Haemophilus influenza, pasteurellamultocida*, etc.) can be controlled by mupirocin.[16] Resistance gradually increases by the bacteria towards the active drugs which is a major concern for researcher.[17-21] To increase the therapeutic activity of the active drug nanocarrier has been introduced. Mupirocin-loaded niosomal gels were developed to inhibit the synthesis of RNA and protein of the above-discussed bacteria without any toxic effect on the human body.[22-24] Mupirocin with unique mechanism action is converted to monic acid20 and excreted through urine once it reached systemic circulation. Also, mupirocin can kill antibiotic-resistant bacterial strains such as methicillin-resistant Staphylococcus aureus (MRSA),[25] and the wound healing ability is also related to its capacity to promote re-epithelialization and angiogenesis and stimulate skin and immune cells.[26]

In this present study, mupirocin is used as a topical antibiotic-loaded with a niosomal carrier for a deeper and better availability of activity to the targeted site. Reports confirm that no study has been reported on the mupirocin-loaded niosomal sustained-release gel. Niosomal gel as a novel formulation enhances patient compliance and acceptance of wound healing treatment.

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Mupirocin Niosomal Gel with Bee Honey & Curcumin as Nano-Drug Delivery in Wound Healing Applications

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Abstract

Wound healing research is still aiming toward complete regeneration and restoration of the skin's function and structure with the least amount of scarring. Controlled and targeted medication distribution to wounds is more convenient than systemic administration, which allows for larger drug concentrations to be delivered to the targeted site over time. The nano wound healing gel demonstrated a dependable administration strategy, excellent local tolerability, and superior drug delivery methods, which can promote faster healing. Recently, niosome formulations have been developed to reduce toxicity while increasing accumulation at the target site. Curcuma longa (CU) and honey are effective at inhibiting the growth of wound-associated pathogens and hastening the healing process. The wound healing potential activity of mupirocin-loaded niosomal gel formulated with honey and curcumin, as well as their blends, by ether injection method and investigated for further studies. FTIR and DSC study reveals the compatibility of the drug and other excipients. In the case of post-approval study the parameters evaluated are entrapment efficiency, drug content, pH, viscosity, spreadability, SEM, in-vitro drug release study, release kinetic study, stability study, and in-vivo wound healing study followed by histopathological study. This study aimed to create an excision wound model in albino rats and compare it to a commercially available ointment (Mupicip by Cipla). The blended formulation (Formulation F7) was administered twice daily, and the wound healing effect was determined by the highest percentage of wound contraction, epithelisation period, and histoarchitecture studies. The obtained results concluded that formulation F7 is considered as best formulation and has shown a higher percentage of wound contraction 99.08%. The histological study also confirms that formulation F7 promotes faster wound healing.

Keywords: Wound healing, Mupirocin, Curcumin, Honey, Niosomal ointment Nano-drug delivery.

Introduction

The wound is the disruption of cellular and anatomic continuity of living tissue, which is the main cause of physical illness. Wound healing is the dynamic process of survival of

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23

EVALUATION OF ANTIDIABETIC AND ANTIOXIDENT ACTIVITY OF ETHANOLIC EXTRACT OF *RHUS MYSORENSIS* IN ALBINO RATS

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ABSTRACT:

One of the greatest health issues facing the globe today is diabetes mellitus, whose prevalence and related mortality are rising. Poor blood sugar control has detrimental effects on one's health. Although traditional anti-diabetic medications work well, they also have unavoidable side effects. However, medicinal plants can serve as a different source of antidiabetic medications. Focus is placed on preclinical and clinical investigations as examples of medicinal plants with potential for treating diabetes are given. The major goal of the current investigation is to assess the antioxidant and anti-diabetic effects of an ethanolic extract of Rhus mysorensis in albino rats.The goal of the study is to identify prospective ethnobotanical herbs for the creation of phyto medicine by investigating the potentials of the bioactive components from Rhus mysorensis and demonstrating their safety and efficacy.

KEY WORDS: Diabetes mellitus, ethanolic extract, Alloxan, antidiabetic, Glucose tolerance and Pathological study.

INTRODUCTION

Diabetes mellitus is a collection of metabolic disorders that affect how fat, glucose, and protein are metabolized. It is caused by abnormalities in insulin secretion, insulin action (sensitivity), or both, and can cause organ failure in the eyes, brain, heart, kidney, and reproductive system. Reduced insulin secretion, decreased glucose utilization, and increased