

**GLOBAL SCENARIO IN PHARMACEUTICAL INDUSTRIAL AND
ACADEMIC RESEARCH
(INTELLECTUAL PROPERTY: CREATION & PROTECTION)”
GSPIAR**

26-27th May 2018

ABSTRACT BOOK

Organized by
Faculty of Pharmacy, Dr. APJ Abdul Kalam University, Indore

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GLOBAL SCENARIO IN PHARMACEUTICAL INDUSTRIAL AND ACADEMIC RESEARCH (INTELLECTUAL PROPERTY: CREATION & PROTECTION)”

About Conference

We are pleased to announce that Faculty of Pharmacy, Dr. A. P. J. Abdul Kalam University will be hosting the First International Conference on “Global Scenario in Pharmaceutical Industrial and Academic Research” in the enchanting University town of Indore. The Theme of the Conference is “Intellectual Property: Creation & Protection”. The conference spanning over two days, includes scientific symposium by renowned international and national speakers which gives us an insight into the latest developments in pharma industry and intellectual property rights and more delegates expected to participate from all over India. The unique event will explore the significance of patent and registration of new chemical entity. We are looking forward with great enthusiasm towards your active participation in this event to be held in Faculty of Pharmacy, Dr. A. P. J. Abdul Kalam University, the global community.

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International Conference

Schedule of Event: Inaugural Session

Date: 26th May 2018

Time: 10:30 am to 11:45 am

9:00 am - 10: am	Registration and Breakfast
10: 30 am- 11:45 am	Opening Ceremony Floral Welcome Saraswati Vandana Welcome Speech By Organizing Chairman Dr. Arun Kumar Gupta, Dean, Faculty of Pharmacy & Principal, School of Pharmacy, Dr. A. P. J. Abdul Kalam University, Indore Speech of Chancellor/Chairman Dr. Sunil Kapoor, Founder Chairman, RKDF Group of Institution & Dr. A. P. J. Abdul Kalam University, Indore Speech of Vice Chancellor's Dr. Sandeep M Salodkar, Ho'ble Vice Chancellor, Dr. A. P. J. Abdul Kalam University, Indore Speech of Chief Guest (Academic) Dr. Shailendra Saraff, Ho'ble Vice Chancellor, Durg University and Vice President, Pharmacy Council of India, India Speech of Chief Guest (Industry) Mr. Chirag Patel, Owner & Managing Director, Inventa Holding Pvt. Ltd., Mumbai Speech of Guest of Honor Dr. Vinay Tripathi, Owner & Managing Director, Epoch Pharmaceutical Pvt. Ltd., Indore Release of Abstract Book All the Inaugural Guest & Speakers of Conference with Conference Scientific Co Partner Dr. Anurekha Jain, Chief Editor, Asian Journal of Pharmaceutical & Clinical Research, Innova Pharma Research, India Felicitation of Guests Vote of Thanks of Inaugural function By Convener Dr. Raghvendra Dubey, Principal, College of Pharmacy, Dr. A. P. J. Abdul Kalam University, Indore

Scientific Session: Day-1

Date: 26th May 2018 : **Time: 12:00 noon-2:00 pm**

12:00 pm to 12:45 pm	Session-I Speaker Mr. Gabriel Silver, Clinical Research Associate, Lead –APAC, Medpace Australia Pty Ltd., South Yarra, Australia Topic : Academic and Industry Collaboration- Building a Better Future
1:00 pm to 02:00 pm	Lunch

Date: 26th May 2018 : **Time: 2:00 noon- 6:00 pm**

2:00 pm- 2:45 pm	Session-II Speaker Dr. Rao Vadlundi, President, Common Wealth Pharmacist Association, East Smithfield, London UK Topic : Patent Vs Publication: the Academic Scenario	P O S T E R C O M P E T I T I O N
2:50 pm- 3:35 pm	Session-III Speaker Dr. Mogana Sundari, Deputy Dean Pharmacy, UCSI University Kula Lampur, Malaysia Topic : Generic Medicine Entry Malaysia: The factor and challenge in the IPR status of innovators	
03:45 pm- 4:30 pm	Session-IV Speaker Dr. Manish Jindal , CEO, Quality Council of India Topic : Role of Quality Council of India in Pharmacy ; Overview	
4:40 pm- 5:30 pm	Session-V Speaker Dr. Yelena Slavko, Professor ,Kazakh National Medical University, Kazakisthan Topic : Liver Hepatotoxicity: A critical aspect in New Drug Research (Hepatotoxicity of Paracetamol: Role of Liver Enzyme)	
5:30:pm- 6:00 pm	High Tea	

Scientific Session: Day-2

Date: 27th May 2018 : **Time: 9:00 pm- 10:0pm**

09:00 am - 10:00 am	Breakfast
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Date: 27th May 2018 : **Time: 10:00 am- 01:30 pm**

10: 00 am to 10: 45 am	Dr. Sholphan Sadykova, Professor, Kazakh National Medical University, Kazakisthan Topic : Angiogenesis on Tumor Cells role of WBC to fight Cancer	P O S T E R C O M P E T I T I O N
10: 50 am to 11: 35 am	Dr. Vinay Tripathi, Director, Epoch Pharmaceuticals Live Demonstration of Patent Generation & Protection Topic : Attainment of Novelty reality or Fantastic Live Demonstration of Patent generation	
11: 40 pm to 12: 25 pm	Dr. Mustafina Kamilya, Assistant Professor, Kazakh National Medical University, Kazakisthan Topic : Role of Natural Products In Cancer Therapy	
12: 30 pm to 1: 30 pm	Lunch	

Date: 27th May 2018 : **Time: 2:00 pm- 5:30pm**

2:00 pm - 3:30 pm	Dr. Nilesh Trivedi, Asst Director, MSME, Govt. of India Topic : MSME: Risk Relevant Ratio for Novel Enterprises MSME Schemes for New Aspirants
4: 00 pm - 05:30 pm	Valedictory

Date: 27th May 2018 : **Time: 5:30 pm- 6:00pm**

05:30 pm - 06:00 pm	High Tea
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CHANCELLOR MESSAGE



Dr. Shruti Kumari
Chancellor
Dr. A.P.J Abdul Kalam University

I am certainly very happy to know that Faculty of Pharmacy is going to organize the International Conference with the theme of “**Global Scenario in Pharmaceutical Industrial and Academic Research** (Intellectual Property: Creation & Protection)” on 26-27th May 2018.

Organizing an event does not come without an effort. It requires vision, mission and hard work. Conference of such nature provide a great opportunity to Pharma fraternity, not only to update knowledge and keep obsessed with latest developmental scenario in the respective field, but also an occasion for the resource persons, delegates to exchange ideas and interact with each other.

I take this opportunity to congratulate the organizing committee and to extend warm welcome to the resource persons and delegates. I thank all the national and international delegates who have come from various parts of the country and across the globe and we consider it as our privilege and honor to have you all over here.

I wish you all for the grand success of this wonderful event.

VICE CHANCELLOR MESSAGE



Dr. Sandeep M Salodkar
Vice Chancellor
Dr. A.P.J Abdul Kalam University

It is a matter of great pleasure that the focal theme of the International Conference on “Global Scenario in Pharmaceutical Industrial and Academic Research (Intellectual Property: Creation & Protection)”. This conference is an aim to strengthen the national and international scenario of pharmaceutical industrial and academic research by offering a common platform to pharmaceutical scientists, researchers and students.

The conference will stimulate the scientific tamper between students, teachers and industrial leaders for building the bridge between academia and industry. Scientists across the globe, especially from Australia, Malaysia, Russia and many other will participate as invited speakers to address the current need of Industry.

Conferences are meant essentially for scientific exchange and generation of new ideas in the chosen field along with personal interaction and social together. I understand that a big contingent of national & international speakers are participating to speak on variety of topics thus enriching the knowledge of intellectual property rights.

I congratulate the members of the committee for bringing out this souvenir and also express my warm welcome to the all national and international delegates.

I wish the conference all the success and my heartiest congratulations to the organizing committee.

PRO VICE CHANCELLOR MESSAGE



Mrs. Deepika Pathak
Pro Vice Chancellor
Dr. A.P.J Abdul Kalam University

I have immense pleasure in writing this message on the occasion of the International Conference on Global Scenario in Pharmaceutical Industrial and Academic Research (Intellectual Property: Creation & Protection) hosted by the Faculty of Pharmacy, Dr. A. P. J. Abdul Kalam University, Indore between 26-27th May 2018.

This conference will provide a platform to groom young scientists from all over the country and to bridge the researchers working in academia and other professionals through current technological trends. It is a high time to create research activities among the budding professionals.

May this Conference provide greater opportunities for every member of this speciality to learn more and let this learning be of immense help to the community at large.

I congratulate the organizers for their initiative and wish the Conference all success.

ORGANIZING CHAIRMAN MESSAGE



Dr. Arun Kumar Gupta
Dean & Professor
Faculty of Pharmacy
Dr. A.P.J Abdul Kalam University
GSPIAR-2018

"Learning gives creativity, creativity leads to thinking, thinking leads to knowledge and knowledge makes you competent."

Warm Greeting to All !!!!!

It gives me an immense pleasure that Faculty of Pharmacy is organizing the International Conference with the theme of Global Scenario in Pharmaceutical Industrial and Academic Research (Intellectual Property: Creation & Protection) on 26-27th May 2018

The conference is aimed to provide the platform for industrialists, educationists, researchers and students to debate and discuss on the vital need of research. The unique event will explore the significance of patent and registration of new chemical entity. The collective and comparative discussion will established the crucial insights on exciting work happening in the interface of the academic & industrial research.

The GSPIAR - 2018 with your support is putting its best efforts to conduct this mega event in a befitting manner, considering the importance of Institute-Industry collaboration. The theme of the GSPIAR – 2018 seeks to not only strengthen our commitment towards the ideals of our specialty, but also to encourage us to look ahead and stay abreast of the latest developments in pharmaceutical industrial and academic research.

The entire conference will be in parallel sessions and this conference will be addressed by eminent scientists and professors as key note/invited speaker while it will also attract young researchers, faculties and students across the country, who will take part as poster presentations.

I extend my warm welcome to the national and international resource persons young researchers, budding Pharma professionals, eminent scientists, guests, faculties, and industrialists in this splendid conference and wish the conference a great success.

I hope all the delegates will derive maximum benefit from this event and take back fond memories of the Indore experience!

Best wishes.....

JAI HIND 

CONVENER MESSAGE



Dr. Raghvendra Dubey
Professor
Faculty of Pharmacy
Dr. A.P.J. Abdul Kalam University
GSPIAR-2018

Dear Colleagues,

On behalf of the Faculty of Pharmacy, Dr. A. P. J. Abdul Kalam University, Indore, I heartily extend warm welcome to all the national and international delegates, renowned scientists and participants to this International Conference with the theme of Global Scenario in Pharmaceutical Industrial and Academic Research (Intellectual Property: Creation & Protection) on 26-27th May 2018. The presence of other dignitaries during the two days conference is a further testimony to our sincere pursuits to achieve nothing less than the 'best', they have long trails of success behind them.

The conference theme aims to create the platform for discussions that provide insights into the abounding opportunities in the pharma industry so that budding pharma professionals can upgrade their knowledge in the field of intellectual property. The conference will generate new ideas and inspire innovative research in future. The ability to advance research skills can be whetted to perfection not only through study but also via exposure to specialist in the area of research. The event will definitely provide us an idea for some ideal development in pharmaceuticals.

I am confident that GSPIAR-2018 shall provide an effective platform for innovation, technology transfer and entrepreneurship concurrently meet to share and disseminate the knowledge and the rich experience of the pharma professionals, and to look forward solutions to the challenging problems.

The organizing committee has worked hard and in different directions to make this conference a memorable one. It has been a good learning experience and my dear students for their endless hard work of months to make this conference a grander success. My special honored gratitude to MSME

for the technical support and their keen cooperation for the program. I hope that the interactions amongst you will create opportunities for collaborations with pharmaceutical industry and will provide a platform for initiating collaborative research projects.

I intend to take this event ahead as an ideal, the motive not only is to generate discussions around contemporary issues, but also to propel the culture of academic exchange, which is the only way to achieve excellence in this field.

I hope this event will motivate and fruitful for everybody. I assure you that we will make your time spent with us and in the conference a memorable one.

Have a truly special and wonderful GSPIAR–2018 International Conference!!

COORDINATOR MESSAGE



Dr. Revathi A Gupta
Professor
Faculty of Pharmacy
Dr. A.P.J. Abdul Kalam University
GSPIAR-2018

Dear Delegates,

Warm Greetings!

It gives me immense pleasure to write a message for the international conference of Global Scenario in Pharmaceutical Industrial and Academic Research (Intellectual Property: Creation & Protection) on 26-27th May 2018 hosted by Faculty of Pharmacy, Dr. A. P. J. Abdul Kalam University, Indore .

Conferences offer wonderful vistas for interaction and exchange of scientific initiatives and ideas. It will provide a great platform to further explore the ever expanding horizons of academic and industrial collaborative research.

The members of organizing committee of GSPIAR-2018 have strived towards providing a comprehensive and enriching learning experience for all the delegates. Continuing the precedence established by earlier successful national events, we have arranged this wonderful scientific event for exchange of research endeavors and innovative ideas.

Situated on the scenic and idyllic locale of Indore, the conference venue is an ideal venue for rejuvenating interactions and scientific exchanges. We have left no stone unturned to provide all the delegates a wonderful, invigorating and more interesting learning experience during your stay.

We are hopeful that your interactions with the leading stalwarts and luminaries in the field of Pharma sector will further ignite the passion for undertaking meaningful and relevant research in the future.

I hope that you carry back the zeal and enthusiasm of bringing industry and academic closer to many more needy individuals. We are also hopeful that these two days of scientific interactions will

inspire you to bring the best of scientific research to the most needy populace. The overwhelming response of various participants from across the country has been phenomenal and I thank all of them for sharing their research in the international conference.

I heartily extend a warm welcome to all delegates for an extremely enriching experience in the august gathering of intellectual regulators, industrialist, academicians, distinguished scientists, research scholars and students.

Have a wonderful, special and memorable GSPIAR-2018 International conference.....

HONORABLE GUESTS



Honorable Chief Guest
Academic
Prof. Shailendra Saraf
Honorable Vice Chancellor
Durg University
Vice President, Pharmacy
Council of India, India



Honorable Chief Guest
Industry
Mr. Chirag Patel
Owner & Managing Director
Inventa Holding Pvt. Ltd.,
Mumbai



Chief Guest Valedictory
Dr. V. Ganesan
Centre Director
UGC-DAE Consortium for Scientific
Research, Indore Centre

RESOURCE SPEAKERS



Dr. Rao V. S. V. Vadlamudi
President
Commonwealth
Pharmacists Association
London (U.K.)
Immediate Past President
Indian Pharmaceutical
Association



Dr. Mogana SR
Deputy Dean
Assistant Professor
Faculty of Pharmaceutical
Sciences, UCSI University
Malaysia



Mr. Gabriel Silver
Clinical Research
Associate, Lead -APAC,
Medpace Australia Pty
Ltd., South Yarra
Australia



Dr. Yelena Slavko
Professor
Kazakh National Medical
University Kazakisthan



Dr. Sholphan Sadykova
Associate Professor
Kazakh National Medical
University
Kazakisthan

RESOURCE SPEAKERS



Dr. Manish Jindal
CEO, Quality Council of India
NewDelhi



Dr. Mustafina Kamilya
Associate Professor
Kazakh National Medical University
Kazakhstan



Dr. Nilesh Trivedi
Assistant Director
MSME, Govt. of India



Dr. Vinay Tripathi
Director
Epoch Pharmaceuticals

PATENT VS RESEARCH PUBLICATION: THE INDIAN ACADEMIC SCENARIO

DR. RAO V. S. V. VADLAMUDI

Indian academic research particularly in the field of pharmaceutical sciences leads to more research publications than patents and it is necessary to take a look at what the major distinction between patenting and publishing is to understand why our academic research drifts more towards publications. Patenting is a process of registering an invention or discovery that did not exist or known before, while research publication is a documentation of an experimental observation or finding which has some novelty but need not necessarily be hitherto unknown. Often times research publications are reproductions of what has already been reported but with slight variations. Patents are of several kinds, but for the pharmaceutical field, patents more often are of the following types; product patent, process patent and application or use patent. Exploration to discover something that is unknown or unclear or to find a solution for a complex situation is the basis of emergence of patentable discoveries. It is necessary to probe further in research rather than come to a quick conclusion. Academic research in our country usually makes too many assumptions and hasty conclusions that depend heavily on what has already been published, there by leading to a quick publication of a low impact rather than resorting to questioning and exploring all possibilities before reaching conclusions.

GENERIC MEDICINE ENTRY INTO MALAYSIA: THE FACTOR AND CHALLENGE IN THE IPR STATUS OF INNOVATORS

DR.MOGANA SUNDARI RAJAGOPAL

Malaysia has a fast-growing domestic pharmaceutical manufacturing industry. Among Malaysia's over 250 registered local drug manufacturing companies, about two-thirds are producers of traditional and herbal medicines, while the remaining third are mostly manufacturers of generic drugs. The market size for the pharmaceutical product globally in 2016 was estimated to reach USD1.2 trillion. In Malaysia, the market was set to grow from RM2.3billion in 2015 to RM3.6 billion by 2020 with an estimated annual rate of 9.5%. The availability of generic medicine equivalents of trademark innovator medicines is crucial for maintaining the Malaysian heavily subsidized public healthcare system, and for reducing rising national pharmaceutical expenditure. Up to 2013, the Malaysian generic market is growing at a rate of 12% compared to 9% for patented. There is a US2.9 billion revenue target for the blockbusters with patent expiration between 2013-2020. This creates opportunities for generic drug players to produce generic versions of the drugs and increase market share. Key factor is of course the ability of generic manufacturers to take advantage by preparing new products in their production pipeline, appropriate manufacturing facilities & bioequivalent to the proprietary drugs. The presence of a variety of government policies has had varying effects on the entry of generic medicines to the Malaysian pharmaceutical market. These policies are those related to intellectual property rights; medicines regulation and registration; pharmaceutical pricing and competition; and the demand-side policies measures on generics prescribing, dispensing and consumptions. This presentation will try to elaborate on the driving force and challenges of the generic medicines in Malaysia.

ACADEMIC AND INDUSTRY COLLABORATION- BUILDING A BETTER FUTURE

DR. GABRIEL SILVER

Knowledge intensive areas such as biotechnology and health rely on innovation and research as the key to progress and growth. Collaboration is imperative for innovation to occur and is a vital ingredient for success. Different types of collaboration exist, from those solely aimed at expanding the base of knowledge, to ones focused on the production of economic value and wealth. Additionally, collaboration occurs on many levels, ranging from individual, to organizational. This presentation aims to explore academic and industry collaboration for the facilitation of robust research and for the translation of that research into measurable outcomes. A review of the current literature was undertaken as well as a review of various current Australian Government, Business Council, Academic Institution, and Industry websites.

Recurrent themes emerged from the literature search pertaining to the successful collaboration of Academia and Industry. These included having clearly defined goals and deliverables, transparent communication through regular progress reports and conferences, and agreement being reached regarding intellectual properties and deadlines. Additionally, lessons were gained from the Australian landscape in regards to initiatives to promote and encourage successful academic and industry collaboration, both internationally and locally.

Academic and Industry collaboration can ensure the translation of fundamental research into the market to affect health and economic outcomes on both a micro and macro scale. These effects can be seen in all areas of the economy, and have effect in various areas such as health, social, and economic to name a few.

MSME: RISK RELEVANT RATIO FOR NOVEL ENTERPRISES, MSME SCHEMES FOR NEW ASPIRANTS

DR. NILESH TRIVEDI

MSME is an apex body for formulating MSME policies in the country and implements promotional activities through country provided wide services to the Micro, Small and Medium Enterprise sector. MSME provide facilities for testing, training for entrepreneurship development, preparation of project and product profiles, technical and managerial consultancy, economic information in the state of Madhya Pradesh. The MSME conducts a large number of vocational and entrepreneurship development programmes. The programmes include Entrepreneurship development programmes (EDPs), Entrepreneurial Skill Development Programme (ESDP), Management Development Programmes (MDPs), Industrial Motivation Campaigns (IMCs) and Vocational Education Trainings.

The aim of programs is to provide useful information on process design, manufacturing practice involved in testing and quality control. The program will provide skill up gradation and equip them with better and technological skills of production.

PATENT GENERATION & ITS PROTECTION THE CURRENT STATUS & LIVE DEMONSTRATION

DR. VINAY TRIPATHI

Patent is an Intellectual Property right which includes product, process, trademarks, copy rights, layouts and industrial designs. In broad sense patent it is granted to its inventor to prevent other from own claimed invention. In India, IPR came to light when we entered into WTO as a member state. Patent regime has undergone a huge transformation and the awareness amongst Indians has been increased in past decade but the fact of conversation of patent in commercial use is observed relatively low. India in comparison to other countries has relatively good patent system which is designed legally better for the inventors. Numbers of amendments were made in intellectual properties in India and the latest is made in Indian parliament in 2005 & 2007. The recent guidelines and laws have changed the condition of patent in pharmaceuticals.

Currently new uses of the known substance are not patentable however new dosage forms are easily patentable. Pharmaceutical patent is big sector in which simple admixture of substance are not patentable while major formulation changes are required for patent. In Pharmaceuticals, biopharmaceuticals and biotechnology products plasmids, vectors, isomers, polymorphs, other derivatives and complexes etc. are patentable. To verify the drug manufacturing especially generic drug manufacture to regulatory agencies for not using the patent drugs the patent linkage system is introduced.

LIVER HEPTOTOXICITY: A CRITICAL ASPECT IN NEW DRUG RESEARCH

DR. YELENA SLAVKO

Hepatotoxicity is a phenotype of liver Cell injury. There are multitude causes of hepatotoxicity which include drugs, toxins, herbal and dietary supplements. There are number of reactions clinically occurs due to the same which include liver necrosis, hepatitis, cholestasis, vascular changes and steatosis. The mechanism of such toxicity may vary in number of cases but basically they are due to directly or indirectly through reactive metabolites after specific receptor binding, or can react with hepatic macromolecules. The hepatotoxicity can be confirmed by variation in enzymes level in the liver cells. There is remarkable increase in liver enzymes enzymes alanine aminotransferase (ALT), aspartate aminotransferase (AST) and bilirubin levels which indicate the liver toxicity. In Pharmaceutical new drug research collection of hepatotoxic signals is important which observed from non-clinical findings to clinical trials (phase I-III) and post-marketing experiences. The treatment, observation and collection of data of abnormal liver function in humans make it possible to link to the use of drugs.

ROLE OF QUALITY COUNCIL OF INDIA IN PHARMACY: AN OVERVIEW

DR. MANISH JINDAL

Quality council of India is established by Government of India with the aim to achieve and sustain total quality and reliability, in all areas of life, work, environment, products and services, at individual, organizational, community and societal levels. The QCI works on the "Quality for National Well Being". It plays important role at national level in propagating, adoption and adherence to quality standards.

In pharmaceutical sciences it works in all activities which includes education, healthcare, environment protection, governance and research. QCI have significant bearing in improving the quality of life and well being of the citizens. In Pharmaceuticals QCI operate National Accreditation program in accordance with the international standards and guides for the conformity assessment bodies certifying products, personnel, management systems, carrying out inspection and for the laboratories undertaking testing & calibration.

ROLE OF NATURAL PRODUCTS IN CANCER THERAPY

DR. MUSTAFINA KAMILYA

Natural products are of particular interest as cancer therapy because of their potentially effective with low toxicity profiles. USFDA has approved more than 75% of natural products in past decade which are used in treatment and prevention in cancer. The use of various vitamins, minerals, and dietary components reduce the risk of developing specific cancers. Researches indicate that beta carotene, vitamin E, and selenium experienced a significant reduction in overall mortality in Stomach Cancer. Clinically it is also concluded that the dietary use of Selenium supplementation & alpha-tocopherols significantly decreased risk of prostate cancer.

The bioactive curcuminoids is used as chemopreventive due to its antioxidant, anti-inflammatory effect and ability to inhibit activation of carcinogens by cytochrome enzymes. The oil containing Omega-3 fatty acids, such as docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) prevent cancer by inhibit the formation of proinflammatory and procarcinogenic eicosanoids, such as prostaglandins.

It is observed in the number of herbal and dietary supplements can be used as effective chemopreventives

ANGIOGENESIS ON TUMOR CELLS ROLE OF WBC TO FIGHT CANCER**DR. SHOLPHAN SADYKOVA**

Tumor angiogenesis signifies a way for cancer cells to function and succeed for self-sustained growth. The inhibition of tumor-induced angiogenesis may restrict metastasis and tumor growth. Leukocytes are cells of defense. In this defensive reaction the blood and lymphatic vascular system are essential partners because activated endothelial cells stimulate leukocyte recruitment at inflammatory sites and then new blood vessel formation which process called angiogenesis. The antigens and antigen-presenting cells transport to lymph nodes, where they stimulate naive T and B lymphocytes to elicit an antigen specific immune response. The angiogenic process in tumors can be classified into three main phases: inflammatory, proliferative, and remodeling. During the inflammatory phase the leukocytes and monocytes are produced to the tumor. In the proliferative phase, it produce ECM components such as collagenin combination with the proliferation of endothelial cells there is increased proliferation of fibroblasts. The hyperpermeability during the proliferation stage is vital for effective tumor angiogenesis and local degradation of the basement membrane. This permits for the relief of heparin, platelet factors, growth factors and proteases that associate to endorse the formation of new blood vessels as well as to induce their migration and sprouting into the local stroma. The blood vessels are remodeled and allowed to mature during remodeling phase.

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FORMULATION AND EVALUATION OF HERBAL HAIR CREAM USING *HIBISCUS ROSA-SINENSIS*

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Abstract

The purpose of this research was to develop and evaluate a herbal hair cream using *Hibiscus rosa-sinensis* with acceptable properties that would replace the ongoing use of synthetic marketed creams which shows harmful effects, based on market and public survey carried out on crude drugs used presently for herbal hair creams gives us clue for selection of drugs for formulation of oil, cream and gel for hair growth promoting activity. Hibiscus has been reported to have been used as anti-asthmatic agent, anti-inflammatory, antipyretic and possess anti-tumor and anti-convulsant properties. Several studies have revealed presence of antimicrobial properties in flowers of *Hibiscus rosa-sinensis*.

Keywords: Herbal cream; *Hibiscus rosa-sinensis* extract; Petroleum jelly; Oil in water; Homogeneity; pH.

EFFECTS OF ETHANOLIC STEM BARK EXTRACT OF POLYSCIAS FULVA ON MONOSODIUM GLUTAMATE-INDUCED UTERINE FIBROIDS IN WISTAR RATS

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Abstract

The aim of this study was to evaluate the curative property of a stem bark extract of *Polyscias fulva* on monosodium glutamate (MSG)-induced uterine leiomyoma in rats and its safety for use. It was an experimental kind of study. The research was carried out under the department of pharmacology and the department of pharmaceutical chemistry from January 2016 to April 2017. Phytochemical screening was performed on an ethanolic and aqueous extract of the stem bark of *Polyscias fulva*. Curative studies (measuring plasma estradiol, triglycerides and ratios of uterus weight to body weight) using 50,100 and 200 mg/kg of extract, per os, on 800 mg/kg MSG-induced uterine leiomyoma in Wistar rats was conducted. Acute and delayed toxicity of *Polyscias fulva* bark extract was tested. The outcomes were that the monosodium glutamate administered to rats significantly elevated their plasma total cholesterol and estradiol levels. It also increased their uterus weight and size (indicating hyperplasia). Curative treatment reduced significantly the elevated plasma total cholesterol and estradiol level. Treatments also significantly decreased the elevated uterus weight. The lethal dose was greater than 5000 mg/kg p.o. The conclusion was that The ethanolic stem bark extract of *Polyscias fulva* contains phytochemicals significantly decreases elevated levels of plasma cholesterol, estradiol, as well as uterus size and weight suggesting its efficacy as a curative agent for uterine fibroids. The extract is very safe for use.

Keywords: Monosodium glutamate; Uterine leiomyoma; Plasma estradiol; Plasma total cholesterol

THE EVALUATION OF ANALGESIC & ANTI-INFLAMMATORY ACTION OF *ALOE BARBADENSIS* MILLAR EXTRACT IN ALBINO RAT**DEEPIKA BAIRAGEE*, SWETA KULKARNI, RAJU CHOUKSE, ARUN K GUPTA**

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Abstract

The aim of the present study was to evaluate analgesic and anti-inflammatory action of *Aloe Barbadensis Millar* extract in Albino Rat. This study provides information regarding identification of cinole related compound that have anti inflammatory activity through the specific inhibition of COX-2. Overall the cinole preparation use in this study was found to inhibit COX-2 approximately three-fold more than COX-1, and this property should contribute to the beneficial anti-inflammatory activity of *Aloe barbadensis* product. The result of the present study has shown that the food extract of the investigated plant exhibited very high anti-inflammatory activity, this activity may be linked with the presence of poly phenolic compound present in the extract main constitute of aloe barbadensis which are repeated to be anti-inflammatory, antiasthamatic, analgesic, anti-oxidant activity and this finding are in concordance with over results. Carrageenan induced has been commonly used as an experimental animal model for acute inflammation and is believed to be biphasic. The extract significantly inhibited paw edema which was induced by carrageenam in the 2nd phase; this effect is similar to that produced by non-steroidal anti-inflammatory drug.

Keywords: Aloe vera; Carrageenan; Paw edema; Inflammatory; Analgesic

FORMULATION, CHARACTERIZATION AND EVALUATION OF GASTRORETENTIVE TABLET OF RANITIDINE HCl BY USING HPMC AND CARBOPOL**DEEPIKA BAIRAGEE*, SWETA KULKARNI, NEETU CHOUDHARY, RAJU CHOUKSE**

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Abstract:

The main objective of the present work was the formulation, characterization and evaluation of gastroretentive tablet of Ranitidine HCl by using hydroxypropyl methyl cellulose (HPMC) and Carbopol as polymers. Floating tablet of Ranitidine HCl and different polymers were prepared to optimize the drug content, floating ability, swelling index and drug release profile. The blended powder and granules were evaluated for different pre-compression parameters, like mean particle size, angle of repose, tapped density, bulk density, compressibility index, Carr's index and Hausner's ratio. The tablets were evaluated for post-compression features including hardness, friability, weight variation, buoyancy, swelling index and drug content. Ten different formulations F1-F10 of Ranitidine HCl were formulated by variation in the ratio of HPMC and Carbopol. From the investigation it is found that the Ranitidine HCl F1 formulation was found to be better by considering all the evaluated parameters like floating lag time, total floating time, hardness, friability, weight variation and percentage drug release.

Keywords: Gastroretentive Tablet; Ranitidine HCl; HPMC; Carbopol; Buoyancy

POTENTIAL APPLICATIONS OF CARBON NANOTUBES AND NANOFIBERS

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Abstract

Nanomaterials, are materials with structural units on a nanometer scale in at least one direction. Material properties become different on the nanoscale: for example, the theoretical strength of materials can be reached or quantum effects may appear. One-dimensional and quasi-one-dimensional materials such as nanotubes and nanowires demonstrate many extreme properties that can be tuned by controlling their structure and diameter. Carbon can be made to form tubular microstructure called filament or fiber. The unique properties of carbon fibers have expanded the science and technology of composite materials in recent decades. Nanotubes, nanowires, and nanofibers are not only brilliant tools for studying one-dimensional phenomena, but they are also the most important and promising nanomaterials and nanostructures. The role of nanomaterials in industries is growing. Nanofibers are already used for insulation and reinforcement of composites, and many materials and structures incorporating nanotubes and nanowires are under development. Nanotechnology is one of the most important technologies in this century and it is evoking a new industrial revolution. Nanotechnology is changing basic research in the fields of information technology, biological science, environmental science, energy sources, material science, and others. The new trends of industrial elements toward small features are fast transmission, high density, low energy cost and high production. Nanomaterial containing nanostructures are the best material to fulfil these needs. Carbon nanotubes are among the most broadly discussed, researched and applied. Carbon nanotubes are microscopic in nature and tube-shaped in structures, which essentially have a graphite composition sheet rolled into a tube.

Keywords: Carbon Nanotubes; Nanofibers; Nanomaterials; Nanotechnology

FORMULATION AND EVALUATION OF MUCOADHESIVE MICROSPHERE IN GASTRORETENTIVE DELIVERY OF VENLAFAXINE HCL**KUMKUM SHARMA, RAGHVENDRA***

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Abstract

In the present work the formulation and evaluation of the mucoadhesive Venlafaxine HCl microspheres using Hydroxy Propyl Methyl Cellulose K4M as a polymer was studied. Venlafaxine HCl is a new generation serotonin reuptake inhibitor drug showing effective antidepressant properties, having a short bioavailability of 12.6% and biological half-life of 5 hours. By simple emulsification phase separation method using glutaraldehyde as a crosslinking agent the microspheres of Venlafaxine HCl were prepared. Fifteen preliminary trial batches KA1-KA15 of microspheres were prepared by using different volume (10ml to 50ml) of glutaraldehyde (25% v/v aqueous solution) as crosslinking agent, crosslinking time of 1 to 3 hours and the polymer to drug in 2:1 ratio. From those fifteen preliminary trial batches, the optimized formulation was selected based on the percentage of mucoadhesion, stirring speed, (500, 800 and 1000 rpm), drug entrapment efficiency, and particle size. The drug and polymer compatibility study was carried out by using FTIR and the stability study was also carried out for the main formulation. The optimized formulation exhibited a high drug entrapment efficiency of 70% and a swelling index 1.57, % mucoadhesion after 1hour was 80% and the drug release was also sustained for more than 12 hours. As the concentration of glutaraldehyde increased, the mucoadhesiveness decreases and there was no significant effect in time.

Keywords: Venlafaxine; GRDDS; Mucoadhesive microsphere; FT-IR; Mucoadhesion

GSPIAR/2018/IC-07

**EFFECT OF VARIOUS POLYMERS AND THEIR CONCENTRATION ON RELEASE RATE OF MATRIX
TABLET OF METOPROLOL TARTRATE****MANOHAR CHOUHAN*, HARIT KUMAR RAWAL, SURENDRA SINGH DAKHAA, ARUN K. GUPTA**

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Abstract

The present study was done the different concentrations of various polymers on in vitro drug release from sustained release matrix tablet. HPMC K15 M (Hydrophilic) and ethyl cellulose (Hydrophobic) were used as rate controlling polymer for controlled release drug delivery system. Matrix tablets of Metoprolol tartrate were fabricated by varying the concentrations of both polymers via wet granulation method. Tablets were characterized for physical properties like loose bulk density, tapped density, angle of repose, Carr's index, Hausner's ratio; all formulations showed satisfactory properties. Tablets were evaluated for uniformity of weight, thickness, hardness, percentage (%) friability and in vitro release studies. The in vitro release of metoprolol tartrate was evaluated and found that the preliminary batches containing the decrease amount of rate controlling polymer (HPMC K15 M) showed the faster release and the tablet were completely dissolved in 5-6 hours. For the extending the release profile added ethyl cellulose, it increases the dissolution rate and the drug is sustained release upto 12hrs using HPMCK15M and EC in 1:1 ratio. The release rate of Metoprolol tartrate from matrix tablets followed nearly Higuchi kinetics via non-Fickian diffusion controlled mechanism. This study reveals that a combination of HPMC K15M and ethyl cellulose in the ratio of 1:1 (F-5) showed best grade for controlling the release rate. The optimized formulation has drug release profile up to 12 hours.

Keywords: Hydrophilic; Hydrophobic; Extended release; Wet Granulation.

SOLUTION COMBUSTION SYNTHESIS OF ZINC OXIDE NANOPARTICLES FOR WATER TREATMENT

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Abstract

Zinc oxide (ZnO) nano particles (NPs) were synthesized by solution combustion method using sugar as fuel. The synthesized nano particles were annealed at different temperature and subjected to characterization by x-ray diffraction (XRD), scanning electron microscope (SEM) and energy dispersive x-ray spectroscopy (EDAX) in order to study the structural, morphological and chemical composition of the sample. The XRD results revealed that the ZnO NPs are highly crystalline, having hexagonal wurtzite crystal structure. The SEM images showed that ZnO NPs prepared in this study are spherical in shape. The size of ZnO NPs increased with an increase in annealing temperature. The ZnO NPs were subjected to photo-catalytic degradation of organic dyes mixed in de-ionized water under UV and visible light. ZnO NPs showed excellent photo-catalytic activity under UV light. The photo-catalytic activity of ZnO NPs was investigated by varying the annealing temperature, concentration of dyes, dose and duration etc.

Keywords: ZnO; Combustion synthesis; Photo-catalysis; SEM; XRD; EDAX

FORMULATION AND EVALUATION OF SUSTAINED RELEASE TABLET OF METOPROLOL SUCCINATE BY HOT MELT EXTRUSION TECHNIQUE

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Abstract

The present study deals with the formulation and evaluation of sustained release tablet of Metoprolol Succinate by Hot Melt Extrusion Technique. The investigations were carried out on the preparation of tablets by Hot Melt Extrusion technique to improve the dissolution property of highly soluble drug Metoprolol Succinate. Based on the literature studies, various excipients like povidone and ethyl cellulose white were chosen. In the Preformulation studies, based in the solubility of Metoprolol Succinate in different non-volatile solvents, water & phosphate buffer 6.8 was selected as drug solvent for in-vitro dissolution studies. The compatibility between the selected drug and the carrier was tested by physical compatibility method and it was found to be compatible without any interactions. Formulation of tablets was done by using Metoprolol Succinate Hot Melt Extrusion technique and evaluated for dissolution. Out of various formulations prepared, it was observed that F7 showed 96% of the drug release within 2 hours compared to innovator product. This was verified by calculating Similarity factor for trail F7 and was found to be 77.1 %, which confirm that it is most similar to the innovator product. Hence F7 was selected as optimized formulation and evaluation for stability as per ICH Guidelines for three months.

Keywords: Sustained Release; Metoprolol Succinate; Hot Melt Extrusion technique; dissolution

DRUG UTILIZATION EVALUATION STUDY IN HOSPITAL WITH REFERENCE TO ANTIBIOTIC AGENTS

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Abstract

The present study was carried out to obtain prescribing pattern of drugs specially antibiotics in both prophylaxis & empirical directed therapy. Antibiotics are a group of drugs with the most potential impact on morbidity and mortality in the developing world. Misuse of antibiotics is a crucial factor in the genesis of microbial resistance. A prospective analysis of inpatient records over a five-month period was carried out at the hospital. A total of 300 patients of either sex were taken for antibiotics use pattern study. In the first phase of the study; the pattern of antibiotics use in the inpatient department of the hospital was evaluated, In the Second phase of the study, antibiotic use for surgical prophylaxis was evaluated. A total of 300 patients were surveyed for antibiotic use pattern study; 100 patients for surgical prophylaxis survey for 5 months. The average age of the patients was 60 years. Total no. of patients who received antibiotics during the study period was 223. Out of 223 patients, 27 patients received antimicrobials for surgical prophylaxis and rest of 196 patients received antimicrobials as empirical therapy. Out of 223 patients who received antimicrobials, total of 112 patient's specimens were sent for culture. Out of these 112 patients, 23 patients had positive culture reports and 17 patients received antimicrobials as per the culture sensitivity reports. 98 patients received more than 10 drugs and 78 patients received 3 or more antimicrobials during their stay in the hospital. A total of 1870 drugs were prescribed. Pantoprazole was the most commonly prescribed drug; Tobramycin was the most commonly prescribed antibiotic. The evaluation of use of antibiotics for surgical prophylaxis showed that out of 100 patients who were enrolled for surgical prophylaxis study, 75% patients received more than a single dose of antibiotic in operation which lasted for less than 4 hours. In 60% patients, antibiotic given before surgery was continued postoperatively; prescribed at the time of discharge, also 7% patients received cefazolin; fluoroquinolones were used in 15% cases. 8 patients received single dose of antibiotic. 80 patients received more than one antibiotic. Minimum number of antibiotic/s prescribed to a patient was 1. Maximum numbers of antibiotic/s prescribed to a patient were 4. The use of antimicrobials seems to be high (79.8%) in in-patient department of this hospital. Although there are no gold standards for the extent of use of antimicrobials in patient settings. However, the average numbers of drugs per encounter, the percentage of encounters with an antibiotic prescribed are the areas which need further consideration to improve the quality of health care. Reserve antibiotics were not present among top 5 drugs showed that reserve antibiotics were used efficiently. This should be encouraged; in surgical prophylaxis non compliance with the Standard treatment guidelines (STG's) for antibiotic usage was observed therefore the present study findings called for a review of antibiotic prescribing practices.

Keywords: Antibiotics; Drug utilization; Surgical prophylaxis.

EXPLORING THE STRUCTURAL REQUIREMENTS FOR TYROSINE KINASE INHIBITORY ACTIVITY THROUGH MOLECULAR DOCKING APPROACH

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Abstract

To gain more fruitful structural insights towards tyrosine kinase inhibitory activity against EGFR and HER-2 receptor tyrosine kinase enzyme. In this study, docking analysis has been carried out through Molegro Virtual Docker (MVD) 6.0 software on pdb 3RCD. The docking study was performed to observe the interaction of all compounds with the receptor and to examine the agreement between the docking pattern and predictive activity of the validated pharmacophore. Docking study revealed that some of the compounds was nicely bound with ATP binding site of kinase inhibitor receptor through hydrophobic, H-bonding and steric interactions. These compounds show Hydrogen bonding interaction via binding with Met801A amino-acid residues. Rather than hydrogen bonding interactions, compound also exhibited hydrophobic and steric interaction with Asp863A, Ala751A, Met801A, Leu800A and Leu852A amino-acid residues. Kinase Inhibition study suggested that hydrogen bonding, and hydrophobic interaction plays significant role in its inhibitory activity.

Keywords: Tyrosine kinases; Thiazolidin-4-one; Docking; Hydrogen bonding interaction; Hydrophobic interaction.

NEUROPROTECTIVE AND ANTI-AMNESIC ACTIVITY OF *MAJORANA HORTENSIS* LEAVES IN SCOPOLAMINE INDUCED AMNESIA IN RATSANKUR JOSHI ^{1*}, NEELESH MALVIYA ²¹ Modern institute of Pharmaceutical Sciences, Indore.² Smriti College of Pharmaceutical Education, Indore

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Abstract

The present study was carried out to investigate neuroprotective and anti-amnesic activity of *Majorana hortensis* leaves in scopolamine induced amnesia in wistar rats. Hydroalcoholic extract of *Majorana hortensis* at a dose level of 100mg/kg and 200mg/kg was used for present study. Wistar rats (180-200 g) were trained for elevated plus maze. Every animal received 15 trials with inter trial duration of 15 s for 5 days. Scopolamine (3 mg/kg, i.p) was used for induction of amnesia in different groups (n = 6). Piracetam was used as a standard (120mg/kg). Various biomarkers enzymes of brain like superoxide dismutase (SOD), catalase (CAT), contents of thiobarbituric acid reactive substances (TBARS) and reduced glutathione (GSH) in whole-brain homogenates and Acetylcholinesterase (AChE) activity was evaluated. Effect of *Majorana hortensis* extract was evaluated and compared to a standard drug, Piracetam. Scopolamine treatment significantly ($p < 0.01$) reduced the avoidance response compared to control. *Majorana hortensis* extract treated groups shown significant ($p < 0.01$) increase number of avoidance response as compared to scopolamine treated groups, increased oxidative stress in brain after scopolamine treatment. Decrease in oxidative stress in the groups treated with extracts. AChE activity was also improved after *Majorana hortensis* treatment. The results of the study indicate that the hydroalcoholic extract of *Majorana hortensis* leaves have neuroprotective and anti-amnesic activity which supports the traditional claims.

Keywords: *Majorana hortensis*; AChE; Amnesia; SOD; GSH; MDA

QSAR STUDIES OF BENZIMIDAZOLE DERIVATIVES AS POTENTIAL ANTICANCER AGENTS**M.C. SHARMA*****School of Pharmacy, Devi Ahilya University, Khandwa Road, Indore (M.P) - 452 001****Email: mukesh2206@rediffmail.com**

Abstract

Two dimensional quantitative structure-activity relationship studies for benzimidazole derivatives potential anticancer activity were performed using partial least square (PLS) regression method. The data set had 45 structurally diverse molecules and the obtained model was validated by predicting inhibition of twenty compounds as test set. Developed model has high predictive power characterized by $r^2 = 0.8016$ and $q^2 = 0.6998$ respectively. Substitution of electron donating group in the molecule will enhance the positive influence to the activity. Analysis of model has demonstrated the important role of Estate numbers features of molecules on their anticancer activity and provides details on the fine structure and activity.

Keywords: QSAR; Validated; Anticancer Activity

STUDY OF ANTI-OBESITY ACTIVITY IN CORRELATION WITH ANTIDIABETICDEEPAK JAIN^{1,2*}, ANUREKHA JAIN³

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Abstract

The present study was designed to investigate antidiabetic and antiobesity study of extract of *Momordica charantia*, *Eugenia jambolana*, *Ziziphus mauritiana* and *Acacia catechu* using obese diabetic rats' model. Rats received high-fat diet and alloxan was injected intraperitoneal to rats for induction of diabetes. In the preventive experiment, diabetic rats received *Momordica charantia* (200 & 400 mg/kg/day p.o) *Eugenia jambolana* (200 & 400 mg/kg/day p.o), *Ziziphus mauritiana* (200 & 400 mg/kg/day p.o), *Acacia catechu* (200 & 400 mg/kg/day p.o) and aqueous extract of all extract (100 & 200 mg/kg/day p.o). Diabetic rats were also treated with Glybenclamide (5 mg/kg p.o.) and Orlistat (60 mg/kg/day p.o.) as reference standards. Extract of *Momordica charantia*, *Eugenia jambolana*, *Ziziphus mauritiana* and *Acacia catechu* significantly ($p < 0.05$) inhibited body weight gain, blood glucose, triglyceride, total cholesterol, LDL, VLDL, HDL-C, SGPT, SGOT, fasting blood glucose in a dose dependent manner. Extracts-treated rats at doses of 200 and 400 mg/kg improved dyslipidemia in HFD-induced obese rats by enhancing their lipid metabolism when compared to the high fat diet (HFD) control. Taken together, extract of *Momordica charantia*, *Eugenia jambolana*, *Ziziphus mauritiana* *Acacia catechu* and aqueous extract of all extract has potential as a preventive agent for type 2 diabetes mellitus (and possibly obesity) and deserves clinical trial in the near future.

Keywords: *Momordica charantia*; *Eugenia jambolana*; *Ziziphus mauritiana*; *Acacia catechu*; Antidiabetic; Antiobesity.

TWO DIMENSIONAL QUANTITATIVE STRUCTURE ACTIVITY RELATIONSHIP STUDY 2-AMINOBENZOTHAZOLE DERIVATIVES AS ANTICONVULSANT ACTIVITY**BHAGAT SINGH CHOUHAN*, LOVE KUMAR SONI***

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Abstract

Two dimensional quantitative structure activity relationship (2D-QSAR) studies were carried out on a series of novel 6-substituted 2-aminobenzothiazole analogues to elucidate the structural properties required for anticonvulsant activity. The study were performed using multiple linear regression method giving $r^2 = 0.88$ and $q^2 = 0.63$ for Hansch analysis, $r^2 = 0.82$ and $q^2 = 0.68$ for Fujia-Ban analysis respectively. Thus this validated model provides an important structure insight for designing of novel anticonvulsant agents.

Keywords: 6-substituted-2-aminobenzothiazole; Anticonvulsant activity; 2D-QSAR; SMLR.

ANTI-ANEMIC ACTIVITY OF HYDRO-ALCOHOLIC EXTRACT OF SEEDS OF *PRAECITRULLUS FISTULOSUS* IN PHENYLHYDRAZINE INDUCED ANEMIC RATS**CHANDRAKANTA KUSHWAH*, DEEPANSHU GUPTA, ANKUR JOSHI, SAPNA MALVIYA, ANIL KHARIA****Modern institute of Pharmaceutical Sciences, Indore (M.P.), India, 453111****Email: chandakushwah0@gmail.com**

Abstract

This research was envisaged to carry out the anti-anemic activity in hydro-alcoholic extract of seeds of *Praecitrullus fistulosus* in phenylhydrazine induced anemic rats. Phenylhydrazine (60mg/kg) was given intraperitoneally in rats for two days to induce anemia. The animals were divided into 5 groups of 6 animal each. Group 1 was known as normal control group, Group 2 was known as anemic control group, Group 3 was known as standard reference control group given with Vit. B₁₂, Group 4 was known as test control-I given with 100mg/kg of hydro-alcoholic extract of seeds of *Praecitrullus fistulosus*, Group 5 was known as test control-II given with 200mg/kg of hydro-alcoholic extract of seeds of *Praecitrullus fistulosus*. All the test drugs were given for 13 days through oral route once in a day. On 14th day blood was taken out through tail puncture and was subjected to the estimation of RBC, Hb and percentage Haematocrit. Both the hydro-alcoholic seeds extract of and Vit. B₁₂ significantly increase the HB, RBC & percentage Haematocrit level. The results of the study indicate that the hydro alcoholic extract of *Praecitrullus fistulosus* seeds exhibits the anti-anemic activity.

Keywords: Anemia; Anti-anemic activity; Hydro-alcoholic extract; *Praecitrullus fistulosus*; Vit. B₁₂.

FORMULATION OF OPTIMIZED BATCHES OF MUCOADHESIVE MICROSPHERES INTO CAPSULE FOR HELICOBACTER PYLORI ERADICATION

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Abstract

The present work aimed at formulation and development of mucoadhesive microspheres containing Amoxicillin and Famotidine for the effective treatment in eradicating *Helicobacter Pylori* and for use in gastric and duodenal ulcers. The mucoadhesive microspheres were prepared by using emulsion solvent evaporation technique with carbopol-934P and ethyl cellulose as polymers. Initially 27 formulations were prepared for each drug with the help of 3³ Factorial designs and were optimized for dependent results. Finally the optimized batches of mucoadhesive microspheres after evaluation from each drug (A27 and F25) were formulated in final Capsule form. The final capsule batches were evaluated for different parameters like Weight variation, Content uniformity and Drug release. The batches A27 and F25 showed the highest drug entrapment of 66% and 69% and were considered as final optimized batches. The formulated batches passed the weight variation test with permissible limits and had shown the content uniformity of 90% and 92%. The cumulative drug release within 12hrs was shown to be 81.03% and 84.09% accordingly.

Keywords: Muco-adhesive Microspheres; *Helicobacter Pylori*; Factorial designs; Optimization

ANTIULCER ACTIVITY OF AQUEOUS EXTRACT OF FRUITS OF *PRAECITRULLUS FISTULOSUS* IN ALBINO RATS**MALVIYA SAPNA*, JOSHI ANKUR, VYAS NARENDRA, KHARIA ANIL****Modern Institute of Pharmaceutical Sciences, Indore-453111 (M.P.), India****Email: drsapnaneeshmalviya@gmail.com****Abstract**

Ulcer affects nearly 10%-15% of world population can be developed inside the inner lining of the stomach (gastric ulcer) or the small intestine (duodenal ulcer). The present study was carried out to investigate antiulcer activity of aqueous extract of fruits of *Praecitrullus fistulosus*. In present study the aqueous extract of *Praecitrullus fistulosus* was subjected to acute oral toxicity study as per OECD guidelines. Based on the observations of toxicity studies dose of 300 mg/kg was selected for the study. The pretreated animals were induced ulcer using 80% ethanol. Various parameters such as area of gastric lesion, nonprotein sulfhydryls (NP-SH) concentration, gastric wall mucus concentration, total acidity and volume of gastric content; and histopathological parameters like hemorrhage, edema, erosion, ulceration were studied in the control group and pretreated groups. The antiulcer activity was compared with standard drug lansoprazole (30 mg/kg). Pretreatment with aqueous extract of *Praecitrullus fistulosus* fruits showed significant ($P < 0.05$) decrease in the total acidity and ulcer index. The extract treated group also showed significant decrease in gastric lesion and NP-SH and gastric wall mucus concentrations. Improvements in all histopathological parameters were observed in the extract treated group. Overall the aqueous extract of *Praecitrullus fistulosus* fruits was shown to possess significant ($P < 0.05$) antiulcer property in albino rats. The result of the study indicates antiulcer activity of aqueous extract of *Praecitrullus fistulosus* which supports the traditional claims in folklore medicine.

Keywords: Antiulcer activity; *Praecitrullus fistulosus*; Gastric ulcer; Nonprotein sulfhydryls (NP-SH) concentration; Gastric lesion.

SEPRATION OF E, Z ISOMERS OF DOTHIEPIN AND DOXEPIN BY HPLC**KIRTI MALVIYA*, ASHOK KOSHITA, NARENDRA VYAS, SAPNA MALVIYA, ANIL KHARIA****Modern Institute of Pharmaceutical Sciences, Indore****Email: pharma.kirti@gmail.com****Abstract**

Dothiepin, N, N-dimethyl-3-(dibenz [b,e]thiepin-11(6H)-ylidene) propylamine is antidepressant drug useful in the treatment of mild to moderate endogenous depression. It differs in structure from amitriptyline by the presence of sulphur atom in the central ring, which leads to the formation of E and Z isomer. The Z isomer is more active than E isomer. Dothiepin is a Racemic mixture of E and Z isomers. As with related tricyclic antidepressant agents, the induced elevation of mood may be accompanied by atropine like anticholinergic side effects such as dryness of mouth and sedation, Dothiepin is not recommended for use in children. Dothiepin blocks the reuptake of serotonin and noradrenaline. It has antagonistic effects on various postsynaptic receptors. Doxepin N, N-dimethyl-3-(dibenz [b,e]oxepin-11(6H)-ylidene) propylamine also differs in structure from amitriptyline by the presence of Oxygen atom in the central ring, which leads to the formation of E and Z isomer. The Z isomer is more active than E isomer. Doxepin is a Racemic mixture of isomers. As with related tricyclic antidepressant agents, the induced elevation of mood may be accompanied by atropine like anticholinergic side effects such as dryness of mouth and sedation. Doxepin is not recommended for use in children. Doxepin is relatively mild and is used for low level anxiety depression. The racemic mixtures of Dothiepin, N, N-dimethyl-3-(dibenz [b,e]thiepin-11(6H)-ylidene) propylamine and Doxepin N, N-dimethyl-3-(dibenz [b,e]oxepin-11(6H)-ylidene) propylamine are separated by using HPLC techniques to increase the Z isomer concentration which is more effective than E isomer.

Keywords: Dothiepin; Doxepin; Isomer; Antidepressant activity.

ANTI-ANEMIC ACTIVITY OF HYDRO-ALCOHOLIC EXTRACT OF SEEDS OF *COCCINIA GRANDIS* IN PHENYLHYDRAZINE INDUCED ANEMIC RATS**DEEPANSHU GUPTA*, CHANDRAKANTA KUSHWAH, ANKUR JOSHI, SAPNA MALVIYA AND ANIL KHARIA**

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Abstract

The main aim of this current research was to evaluate the anti-anemic activity in hydro-alcoholic extract of seeds of *Coccinia grandis* in phenylhydrazine induced anemic rats. To induce anemia phenylhydrazine (60mg/kg) was administered intraperitoneally in rats for two days. The animal was divided into 5 groups containing 6 animals each. 1st group was served as normal control group, 2nd group was served as anemic control, 3rd group was served as standard reference control administered with Vit. B₁₂ complex, 4th group was served as test control-I administered with 100mg/kg of hydro-alcoholic extract of seeds of *Coccinia grandis* and 5th group was served as test control-II administered with 200mg/kg of hydro-alcoholic extract of seeds of *Coccinia grandis*. All the test drugs were given for 13 days daily through oral route. On 14th day blood was withdrawn, through tail puncture and subjected to the estimation of RBC, Hb and percentage Haematocrit. Both the hydro-alcoholic seeds extract of *Coccinia grandis* and Vit. B₁₂ significantly increase the Haemoglobin, Red Blood Cells & percentage Haematocrit level. The results of the study indicate that the hydro-alcoholic extract of *Coccinia grandis* seeds exhibits anti-anemic activity.

Keywords: Anemia; Anti-anemic activity; Hydro-alcoholic extract; *Coccinia grandis*; Vit. B₁₂.

FORMULATION AND FORMULATION STUDY OF HERBAL SUPPOSITORY OF *VITEX NIGUNDO*

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Abstract

The dried leaves of *Vitex Negundo* (Family: verbenaceae) has esteemed medicinal properties and many uses are referred in Ayurveda. In the present study attempt was made to formulate suppositories of *Vitex negundo* extract for its anti-inflammatory and analgesic activity. The formulations of suppositories with water soluble base were prepared and evaluated for in vitro test from the evaluated parameter it was found that the herbal formulation of suppositories significant for local effect .

Keywords: Ayurveda; *Vitex Negundo*; Herbal formulation; Suppositories

FORMULATION AND EVALUATION OF BILAYER TABLET OF INDAPAMIDE AND TELMISARTAN FOR THE TREATMENT OF HYPERTENSION

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Abstract

The present study was explored to formulate bilayer tablet of Indapamide a Thiazide diuretic with combination of Telmisartan an Angiotensin -II receptor antagonists a fixed dose combination. The main objective of present invention was to provide stable dual release pharmaceutical composition used for treatment of hypertension, chronic stable angina and other related cardiovascular diseases comprising combination of therapeutically effective amount of angiotensin- II receptor antagonist and a diuretic agent, either its lexicemic or enantiomer or its salts forms. The present invention discloses stable pharmaceutical composition of two active ingredients, formulated in a single doses form providing different release profile comprising dual release drug absorption system .To combine both the drugs belonging to different classes of antihypertensive, having different mechanism of action and different pharmacokinetic parameters into a single unit dosage form to provide single pill convenience, additive effects and reduce side effects associated with mono-therapy. The tablets were evaluated for various tests and were found to show compliance with pharmacopoeial specifications. Both the drugs showed highest release rate at lower concentration of polymers. Stability tests showed no any notable change in release rate and drug content. The bilayer tablets of the present work provide dual release rates of the individual components wherein, an accurate dose of individual active ingredient is delivered. The process involves reduced manufacturing steps and manufacturing time making it a cost effective and a physically and chemically stable dosage form.

Keywords: Indapamide; Telmisartan; Hypertension

**DEVELOPMENT AND VALIDATION OF RP- HPLC ANALYTICAL ASSAY METHOD FOR
EZETIMIBE AND SIMVASTATIN TABLET****ARTI NANDWANA*, GURDEEP SINGH, ISHAB KUMAR, NEETESH K JAIN, MAHESH GUPTA**

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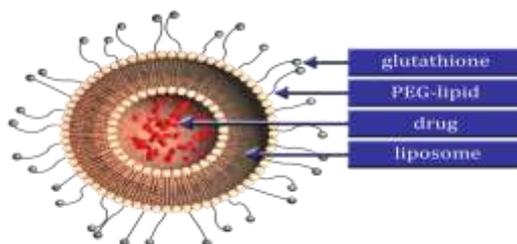
Abstract

The aim of the present work was to develop and validate a of simple, accurate, precise and highly selective reverse phase high performance liquid chromatographic (RP-HPLC) method for simultaneously estimation of ezetimibe and simvastatin in combined pharmaceutical dosage form. The separation was achieved by chromosil C₁₈, column having 250x4.6mm internal diameter and methanol: acetonitrile: 0.1% orthophosphoric acid in the ratio of 75:25:05(V/V/V) as a mobile phase at a flow rate of 0.5-1.5ml/min for optimum separation .detection was carried out using a UV- vis detector at 243nm.The mean retention time of simvastatin and ezetimibe was found to be 6.10 and 3.35 respectively. Determination of the different analytical parameter such as linearity, precision, accuracy, and specificity limit Of detection (LOD) and limit of quantification (LOQ) was done.

Keywords: Ezetimibe; Simvastatin; Validation; RP-HPLC; Method development

G-TECHNOLOGY: AN INNOVATIVE METHOD FOR DRUG DELIVERY TO THE BRAIN**MONIKA MAAN*****Institute of Pharmacy, Dr APJ Abdul Kalam University, Indore, M.P****Email: monikakharb2003@yahoo.co.in****Abstract**

When it comes to treatment brain-related illnesses, the central nervous system (CNS) is one of the most difficult organs to reach. The reason behind it is the various barriers such as blood brain barrier, blood cerebrospinal fluid barrier and blood tumor barrier present in central nervous system. This unmet medical market is very large as it affects two billion people worldwide. The large interest from top-tier pharmaceutical and biotechnological companies indicates the difficulty of transporting drugs across the blood brain barrier, with the help of 2B3 platform technologies. Where the blood-brain barrier blocks many modern medicines, 2B3 is enabling successful development of new treatments for patients with devastating brain diseases. 2B3 technology platforms open new gateways to treat devastating brain disorders like brain tumors, Alzheimer's disease and lysosomal storage diseases by combining with established and marketed drugs. G-Technology@ 2B3 provides the safest proprietary brain drug delivery platform. This G-Technology is the core platform and stands for liposomes coated with glutathione-conjugated PEG to mediate safe targeting and enhance the delivery of drugs to the brain. Glutathione uniquely minimizes common risks like adverse immunological reactions or interference with life-essential physiological pathways.



The plasma level of the liposomal drug was greatly enhanced (500 times compared to the free drug), while the liposomal formulation did reduce the dose-limiting toxicity associated with the free drug. Using a brain microdialysis technique, the free drug in the extracellular fluid of the brain was measured, which indicates that the drug was actually released from the intravenously administered liposomes. This approach is unique in that it does not require drug modification and at the same time gives rise to metabolic protection during transport and increased bioavailability at the target site.

Keywords: Liposomes; Microdialysis technique; Blood-brain barrier; G-Technology

EXTRACTION AND IDENTIFICATION OF BAKUCHIOL FROM *PSORALEA CORYLIFOLIA* LEAVES BY EXTRACTION PROCESS

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Abstract

Psoralea corylifolia Linn be cultivated garden center and two types of immatured seeds were composed in beginning of December and honestly extracted with toluene. Matured seeds be collected in beginning of January and stored in a porous cotton bag at room temp. From the stored seeds, 50-100 gm of the seeds was regularly extracted at an interval of 30 days for six months and last lot of the seeds was extracted at the end of one year. The chemistry medicinal properties and pharmacological activities of *Psoralea corylifolia* Linn were discussed. Development of commercial method for extraction of bakuchiol and its estimation from seeds is described. Effect of bakuchiol yield with maturity of seeds studied. Abnormal variation in yield of bakuchiol with increasing age of seeds had been observed. This abnormality was found due to abnormal formation of bakuchiol derivatives during long storage of the seed-extract. Derivatives were isolated and identified as 6,7-epoxybakuchiol, 7-hydroxybakuchiol, 6-hydroxybakuchiol.

Keywords: *Psoralea corylifolia*; Cultivation; Extraction; Bakuchiol; 6,7-epoxybakuchiol.

FORMULATION AND EVALUATION OF HERBAL LIPSTICK**NUTAN MIMROT GOTHWAL*, REVATHI A. GUPTA, RINKU VERMA****Institute of Pharmacy, Dr. APJ Abdul Kalam University, Madhya Pradesh, India****Email: newmimrot@gmail.com**

Abstract

Lipstick is a cosmetic product containing pigments, oils, waxes, and emollients that apply color, texture, and protection to the lips. The aim of present study was to formulate herbal lipstick using herbs because a use of herbs in cosmetic application has increasing exponentially during recent years. The objectives of this study involves the preparation and evaluation of herbal lipstick containing *Acacia concinna*, *Citrus sinensis*, beeswax, coconut oil, beet root, vanilla essence and vitamin E capsules use as preservative and Evaluation parameters such as melting point, breaking point, thixotropy character, force of application and surface anomalies were performed. The results showed that the formulation have better stability and having minimal or no side effects.

Keywords: Lipstick; *Acacia concinna*; *Citrus sinensis*; Beeswax.

PREPARATIONS AND EVALUATIONS OF HERBAL FOOT CREAM USING HERBAL INGREDIENTS

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Abstract

Ultimate goal of this formulation is healthy and beautiful skin. The foot creaks and makes heal good in appearance and smooth. Among the available formulation we used cream for these preparations. The objective of this formulation was to formulate and evaluate Herbal foot cream. The chandras for wound healing activity, glycerine for moisture, suhaga for antifungal activity and haldi (turmeric) for antiseptic property, camphor for cooling sences and for fragences, and coconut oil and paraffin mom used for base material. In this preparation chandras used 1%, glycerin 2%, haldi & suhaga 0.5%, paraffin mom 1.5%, camphor 0.5%, coconut oil 4 %, pH of formulation is netural,which is suitable for skin. For the cream evaluation test we evaluated the foot cream by the different parameters like nature of cream, colour, stability test, pH test, irritant test, and other parameters. All parameters are found to be in range of a ideal cream preparation which are compared with referred articles like pH was found to be in range of natural which is good for skin and no grittiness is found and formulation show good spredibility.

Keywords: Chandras; Glycerin; Camphor; Haldi; Suhaga; Coconut oil.

FORMULATION AND EVALUATION OF HERBAL HAIR OIL FOR HAIR GROWTH**RINKU VERMA*, REVATHI A GUPTA****Institute of Pharmacy, Dr. APJ Abdul Kalam University, Madhya Pradesh, Indore****Email: rinku.cip@gmail.com**

Abstract

Hair is the one of the vital part of our body and it influences the overall appearance of the person. Hair care products are defined as those formulations which are used for cleansing, modifying the texture of hair, changing of the color, giving life to the stressed hair, providing nourishment to the hair and giving the healthy appearance to the hair. Hair oil those contains herbal drugs are called as hair tonics. The nature of oil is non sticky and addition of perfumes enhances the fragrance and overall improves its popularity. Proper application of hair oil gives luster to hair, softening the hair, gives flowness to hair and more important gives cooling effect to brain. The main objective of the research was to formulate and evaluate Herbal hair oil using Coconut Oil, Aloe vera, Black Caraway, Vitamin E for better growth of hair. The formulated herbal hair oil was successfully evaluated using different standard parameters including sensitivity test, Acid value, saponification value, pH, specific gravity. Excellent results of hair growth were seen in formulation prepared by boiling method of oils preparation technique.

Keywords: Coconut Oil; Aloe vera; Black Caraway; Vitamin E.

RADIOPHARMACEUTICALS APPLICATIONS IN PHARMACY – A REVIEW OF CURRENT APPROACHES

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Abstract

The compounds or substance which emit radiation and which are used in medicine area called radiopharmaceuticals. Radiopharmaceutical preparations are the preparations containing one or more radionuclides. A radiopharmaceutical is a preparation intended for in-vivo use that contains a radionuclide in the form of a simple salt or a complex. It may exist as a solid, liquid, gas or a pseudo gas. The chemical and physical identity and a form of a radiopharmaceutical are very important because in each case, once administered the radiopharmaceutical is intended to target certain tissues, binding sites, biochemical pathways. A radiopharmaceutical can be used for either diagnostic or therapeutic purposes depending on its specific physicochemical and radiation properties. The characteristic of radioactive decay is what makes radioisotopes useful in their medical applications; however, different applications will take advantage of radioactive emissions in different ways. Radioactive materials are regularly used to treat medical conditions, diagnosis pathology, visualize and measure physiological functions, and localize structures and pathways. This review describes both the therapeutic as well as diagnostic uses of radiopharmaceuticals.

Keywords: Radiopharmaceuticals; Radioisotopes; Radioactive decay

LEGISLATION COVERING INTELLECTUAL PROPERTY RIGHTS IN PHARMACEUTICAL SCIENCE: A REVIEW

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Abstract

Intellectual Property Right (IPR) is a right given over a design, innovation, creation, ideas based on their public enthusiasm in status of property. IPR covered Patents, Trademarks, Copyrights, Industrial Design, Inventions and TRIPS. The IPR must possess utility for the grant of patent. In Pharmaceutical Industries IPR protects many principals covering such as Pricing of medicine and R&D. Research & Development gathering new innovations which type used drugs, develop and discovered new drugs, design of new drugs. The IPR covered legislation through licences and layout design of pharmaceutical industries. IPR satisfies the criterion of global innovation, non-obviousness, and industrial or commercial application. Its comprehensive clear understanding of intellectual property rights is precondition for better Identification, Planning, Rendering and there by protection of inspiration.

Keywords: Intellectual Property Rights; Patent; Copy right; Trademark; TRIPS; R & D.

A REVIEW: DEVELOPMENT AND EVALUATION OF POLY HERBAL MOSQUITO REPELLENT**DEEPAK KUMAR GUPTA*, MANOHAR CHOUHAN, REVATHI A. GUPTA, ARUN K. GUPTA****Dr. APJ Abdul Kalam University, Indore (M.P)****Email: deepak_gupta20072008@yahoo.com**

Abstract

A large number of essential oil and medicinal herbs has been reported as a antibacterial, antiviral, antifungal, insecticides and one of which is their property to repel the mosquitoes. An essential oil is a concentrated hydrophobic liquid containing volatile aroma compounds from plants. And their repellent activity has been linked to the presence of sesquiterpenes and monoterpenes. In this time herbal formulations have growing demand in the world market. The poly herbal mosquito repellents are designed as topical preparations that are able to protect the user or environment from harmful insects, such as mosquitoes which transmit diseases through their bite. The proposed methodology might be providing better or similar compared to the synthetic repellents. The present formulation help to reduce harmful side effects and it is a convenient formulation for children as well as adults. The essential oil and plants extract has been reported in the literature having good mosquito repellent activity.

Keywords: Mosquito repellent; Polyherbal cream; Polyherbal extract; Essential oil; Evaluation parameter

UPLC ULTRA POWER LIQUID CHROMATOGRAPHY: ADVANCE TECHNOLOGY USED IN INDUSTRY FOR ANALYTICAL ESTIMATION

RITA BHARDWAJ*, GIRVAR KELKAR, STEFFY MARY CHANDI, PARAS BODANA, REVATHI A. GUPTA

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Abstract

Separation science is revolutionized among the introduction of Ultra-Performance Liquid Chromatography UPLC Technology. Momentous advance in instrumentation and column technology were ready to accomplish spectacular increases within resolution, speed and sensitivity in liquid chromatography. A holistic loom involving simultaneous innovations within constituent part technology and instrument design are endeavored headed designed for meet furthermore overcome the challenges of the analytical laboratory. UPLC Technology facilitates improvements of resolution, sensitivity and speed to be achieved, without compromise. This technology briefing is premeditated near provide with innovative, accessible furthermore prospective UPLC user the aptitude to comprehend how UPLC Technology installation, how to exist successful among it, and how it can provide impactful results within their organization. The Acuity UPLC Sample Manager is considered near minimize the distance between the injector and column inlet in order toward minimize band spreading. The column separates the sample band addicted toward creature analyte band.

Keywords: UPLC; Column technology; Separation; Analyte; Injector

EVALUATION AND FORMULATION OF FLOATING EFFERVESCENT TABLETS OF RAMIPRILMOHD.FAAROOQ KHAN^{1*}, VIMUKHTA SHARMA², UMESH ATNERIYA²¹Institute of pharmacy, Dr.APJ Abdul Kalam University, Indore Madhya Pradesh, India. ^{2,3}BM College of Pharmaceutical Education and Research. Email: mohd.farooqkhan@yahoo.com**Abstract**

Ramipril is antihypertensive prodrug which belongs to the category angiotensin-converting enzyme (ACE) inhibitor class. In Liver it is metabolized to ramiprilat in the liver. Ramiprilat is a potent, competitive inhibitor of ACE. This research is designed to develop a dosage form which retains in the stomach for longer time and the release of which is prolonged. Effervescent Floating tablets containing Ramipril were prepared in different batches i.e. F1 to F9 by direct compression technique using varying concentrations of different grades of polymer with Sodium bicarbonate and citric acid. Formulation of effervescent tablets were evaluated by drug characterization and identification by Physical appearance, Melting point, FTIR which identified the purity of drug. Preformulation studies were done by preparation of calibration curve. Post compression evaluation was done by Drug content, Buoyancy lag time (BLT), Total floating time, Drug release study, in-vitro drug release. In vitro release studies of F1 to F9 formulations of Ramipril were carried out in the dissolution test apparatus (USP Type II). It is, thus concluded that effervescent floating tablet containing Ramipril (F9 formulation) gave slow and complete drug release spread over 20 hours. Thus F9 formulation was said to be optimized formulation. Stability study and others thickness, diameter, hardness, friability and weight of variation were also done. The spectrum thus obtained was compared with reference spectrum of Ramipril. The FT-IR spectra for pure drug was obtained by power diffuse reflectance on a FT-IR spectrophotometer in the wave number region of 4000-400 cm⁻¹. The UV spectroscopy of ramipril exhibited absorbance maxima (λ_{max}) at 231 nm in 6.8 pH buffer. The results obtained may be considered as tools for the manufacturer of standard formulation with great efficacy.

Keywords: Ramipril; Effervescent; Floating; Tablet; FDDS; HPMC

PHARMACOPHORE STUDY OF IMIDAZOQUINOLINE DERIVATIVES AS DPP-IV INHIBITORSSTEFFY MARY CHANDY^{1*}, SUDHA VENGURLEKAR², S. C. CHATURVEDI²¹IOP, Dr. APJ Abdul Kalam University, Indore, (M. P.).²Sri Aurobindo Institute of Pharmacy, Indore, (M.P.)

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Abstract

Type II diabetes is establishing itself as an epidemic of the 21st century and is a severe and increasingly prevalent disease. Currently used antidiabetics are associated with a number of side effects which are known to decrease quality of life for type II diabetes patients. Under these circumstances, intensive efforts have been made to find better and safer oral drugs for type II diabetes. Inhibition of DPP-IV is emerging as a promising approach for treatment of type II diabetes with low risk of hypoglycemia. The present study successfully applied pharmacophore mapping, and molecular docking analysis to characterize a set of synthesized DPP-IV inhibitors. Imidazoquinoline derivatives were subjected to pharmacophore study using SYBYL X 2.1.1 software. The pharmacophore models were derived using GALAHAD module of SYBYL X 2.1.1 software. The optimal pharmacophore model contains nine pharmacophore features. The pharmacophore model provided enough information to understand the structural features influencing DPP-IV inhibitory activity. The information obtained by the study provides a methodology for predicting the affinity of imidazoquinoline derivatives for guiding structural design of novel potent DPP-IV inhibitors. The study will serve as a useful guideline for designing the novel compounds with significant DPP-IV inhibitory activity.

Keywords: Imidazoquinoline; Pharmacophore; Antidiabetics; DPP-IV inhibitors

FORMULATION AND EVALUATION OF FLOATING MICROSPHERES CONTAINING LEVODOPA AND CARBIDOPA

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Abstract

The main objective of work to develop long acting sustained release floating microballons of levodopa and carbidopa by emulsion-solvent evaporation technique for the treatment of Parkinson's disorder..All current levodopa products are formulated in combination with aromatic amino acid decarboxylase inhibitors such as benserazide to prevent the peripheral metabolism of levodopa.In the present research work was to produce floating microspheres of carbidopa and levodopa to enhance their efficacy by increasing their gastric retention time which is major technique to improve efficacy of narrow absorption window drugs, and its improved bioavailability.The effect of various formulation were evaluated and process variable on the particle size ,in vitro floating behavior, percentage yield and in vitro drug release were studies.Further,the microspheres could also be compressed in to tablets, filled in to capsule or formulated in to oral suspension for reconstitution.

Keywords: HPMC K15M; EC; Emulsion-solvent evaporation technique; Parkinson's disorder.

EVALUATION OF SYNERGISTIC EFFECT OF CORIANDRUM SATIVUM SEED EXTRACT AND ACACIA NILOTICA LEAF EXTRACT AS TREATMENT OF OBESITY

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Abstract

Coriandrum sativum (Coriander) has been documented as a traditional treatment for cholesterol and diabetes patients. In the present study, coriander seeds incorporated into diet and the effect of the administration of coriander seeds on the metabolism of lipids was studied in rats, fed with high fat diet and added cholesterol. *Coriandrum sativum* (common name: Coriander) belonging to family Umbelliferae, is an herb that is widely cultivated in India and possessing the nutritional as well as medicinal properties are among the most commonly used spices. The first medicinal uses of the plant were reported by the ancient Egyptians. Both the leaves and seeds of the plant are used for medicinal purpose. Coriander contains many active principles, primarily monoterpenes, α -pinene, limonene, γ -terpinene, p-cymene, borneol, citronellol, camphor, geraniol, coriandrin, dihydrocoriandrin, coriandrone A-E, flavonoids and essential oils. *Coriandrum sativum* has been reported to have several pharmacological effects such as antifertility, antihyperglycemic, antihyperlipidemic, antioxidant, anti proliferative, hypotensive and digestive stimulant. Coriander is also used in detox diet. It helps to remove toxic mineral residue such as mercury and lead, and excrete them in the urine or faeces.

Keywords: *Coriandrum sativum*; Antihyperglycemic; Antihyperlipidemic; Antioxidant; Anti proliferative

PHARMACEUTICAL INDUSTRY AND ACADEMIC COLLABORATION: APPROACHES TO RESEARCH AND INNOVATIONS**GIRVAR SINGH KELKAR*, PARAS BODANA, SHALENDRA KUMAR MANGLAWAT, STEFFY MARY CHANDY, RITA BHARDWAJ, REVATHI A GUPTA.****Institute of pharmacy, Dr, APJ Abdul Kalam University, Indore M P - 452016****Email: girvarkelkar@gmail.com**

Abstract

The pharmaceutical industry needs to consider new approaches to tackle the R&D output challenge it is currently experiencing. One approach to meet these challenges is to promote innovation by joining forces with partners such as biotech companies, other pharmaceutical companies, and academia. Such open innovation concepts are now gaining increasing importance. Whereas classical in-licensing or mergers and acquisitions (M&As) have been traditionally pursued, early research collaborations aiming to enrich the idea pool and de-risk early research projects are gaining interest. Novel models are arising, such as crowd sourcing initiatives or concepts based on the sharing of tools and assets. These endeavours are matched with a rise in interest in academia to contribute to drug discovery, resulting in the establishment of academic screening centers or open access initiatives. Furthermore, novel approaches to share tools and assets will be described such as the probe program of the Structural Genomics Consortium. Besides innovative models, the chapter will highlight requirements within the industry to ensure the uptake and further development of innovative ideas.

Keyword: Open innovation; Research collaborations; Structural Genomics Consortium; Innovative models.

SOLVENT DEPOSITION SYSTEM AND FORMULATION DEVELOPMENT OF RAPID DISINTEGRATING PIROXICAM TABLET USING SIMPLEX LATTICE DESIGN

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Abstract

The objective of the present study is to develop and evaluate rapid disintegrating formulation of Piroxicam tablet using simplex lattice design. Solvent disposition system is used to increase the solubility of poorly water soluble Piroxicam. Simplex lattice design is used for the selection and optimization of disintegrant concentration, types of filler that has pronounced effect on tablet properties, disintegrating time and drug release profile. The blend was examined for bulk density, tapped density, Hausner's ratio, angle of repose and compressibility index. Different formulations from F1 to F7 were prepared and the prepared tablet was evaluated for hardness, friability, drug content, *in-vitro* drug release and the results were found satisfactory. Stability study has been carried out for selected formulations (F4, F5 and F6) and found that the formulation is stable enough at different temperature conditions (40°C, 50°C and 60°C). Half life of RDT of Piroxicam was found more with decreasing temperature (40°C) whereas increasing temperature the half life decreases (50 and 60°C). Shelf life of RDT of Piroxicam more with decreasing temperature (40°C) whereas increasing temperature the half life decreases (50 and 60°C). Hence above study concluded that the RDT of Piroxicam decomposition under elevated temperature.

Keywords: Piroxicam; Rapid disintegrating tablet; *In-vitro* drug release; Half life; Stability study

**FORMULATION AND EVALUATION OF POLYHERBAL ANTIFUNGAL FOOT CREAM BY USING
*OCIMUM SANCTUM LINN, CURCUMA LONGA LINN AND AZADIRACHTA INDICA*****DEEPIKA BAIRAGEE*, DEVENDRA BAIRAGEE, NEETU CHOUDHARY, SWETA KULKARNI**

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Abstract

The main objective of our present research work was to develop a novel formulation consisting of combination of *Ocimum sanctum Linn*, *Curcuma longa Linn* and *Azadirachta indica* for the treatment of fungal infection of foot. Also to formulate effective, stable polyherbal antifungal foot cream and evaluate its physical and antifungal activity. The ethanolic extract was prepared by using maceration method. The cream base was prepared and the formulation of foot cream was done by incorporating the extract in the base by levigation method. After the completion of formulation it was evaluated for its physicochemical parameters like colour, odour, pH, spreadability, extrudability, consistency, diffusion study, solubility, wash ability. Also the formulation was evaluated for its stability at different temperature which shows no change in the irritancy, spreadability, extrudability and diffusion study.

Keywords: Spreadability; Maceration; Levigation; Antifungal; Extrudability; *Azadirachta indica*

FORMULATION AND EVALUATION OF HERBAL SYRUP FOR THE TREATMENT OF COUGH**ABHISHEK DWIVEDI^{1*}, SUMEET DWIVEDI², SHAILESH GUPTA**

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Abstract

Cough is a very common problem associated due to pollution and other causes. The present paper deals with the formulation and evaluation of herbal cough syrup. Five different batches of formulation was prepared using aqueous extract of *Ocimum sanctum*, *Eugenia carophyllus*, *Foeniculum vulgare*, *Piper longum*, *piper nigrum*, *Ficus religiosa*. The prepared formulated was evaluated and it was found that the formulation code F3 is effective in the treatment of cough.

Keywords: Cough; Formulation

TRADITIONAL PHYTOTHERAPY OF MALWA REGION OF MADHYA PRADESH: IN REFERENCE TO THE TREATMENT OF VIRAL HEPATITIS**MOHIT CHATURVEDI^{1*}, RAJU CHOUKSE¹, SUMEET DWIVEDI²**

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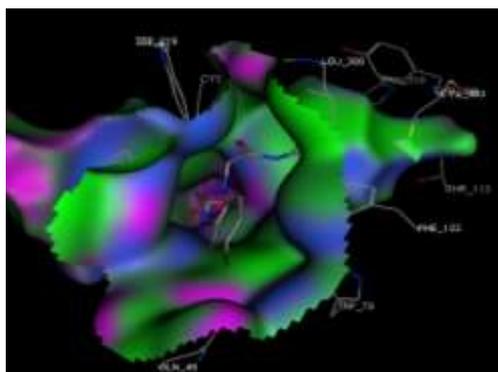
Abstract

WHO has already recognized the contribution of traditional health care in tribal communities; in the present work authors have collected 28 plant species from different study sites of Malwa region of Madhya Pradesh. These species contain valuable chemical substances and are useful to cure viral hepatitis. During the course of present investigation attempt was made to flourish the status and conservation strategies of the plant species and among 28 plant species it has been found that 04 species are endangered, 08 species are critically endangered, 05 species are vulnerable, and rest are rare and common in occurrence in the study area and the methods are mentioned by the ethnic group to conserve these plant species. However, different types of strategies are required to be adopted such as in-situ conservation, ex-situ conservation and traditional conservation to conserve the plants which are vulnerable and endangered.

Keywords: Phytotherapy; Viral Hepatitis; Malwa region

RATIONAL DESIGNING *IN-SILICO* SCREENING AND *IN-VITRO* EVALUATION OF HETEROARYL ACETIC ACID ANALOGS AS ALDOSE REDUCTASE INHIBITOR**ARUN KUMAR GUPTA, PRIYANKA NAGAR****SCHOOL OF PHARMACY (FORMERLY KNOWN AS RKDF INSTITUTE OF PHARMACEUTICAL SCIENCES) DR. A.P.J. ABDUL KALAM UNIVERSITY, INDORE
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NADPH oxidoreductase, play an important role in the many pathogenesis such as neuropathy, nephropathy and retinopathy in diabetic patient. Various scaffolds have been explored to overcome such complications. Yet most of them have been retreated since undertaking clinical assays, because of low efficacy, unfavorable side effects, or toxicity. Thus, there is an urgent need to develop new NADPH oxidoreductase inhibitors (aldose reductase inhibitors), which may alter the physicochemical properties and enhanced the bioavailability as well as devote from the adverse effects. On the basis of extensive literature study set of compounds heteroaryl acetic acid analogs were rationally designed. These compounds were subjected to *in-silico* study using docking algorithm. Docking studies of these compounds revealed that the heteroaryl moiety deeply influenced the key p-p stacking while acetic acid group contributed in hydrogen bond interactions with Tyr 48, His110 and Trp 111. The phenyl ring of scaffold showed π - π sticking with Trp111, while benzimidazole showed π - π sticking with Try20. The structural insights obtained from the docking study gave better understanding of heteroaryl acetic acid analogs and macromolecular interactions and further help in rationally selection of molecules for synthesis.

**Key Words:** Aldose Reductase Inhibitors; Heteroaryl acetic acid analogs; Diabetic complications

DESIGN, DEVELOPMENT AND CHARACTERIZATION OF HERBAL CREAM FOR THE TREATMENT OF VAGINAL INFECTION**SHWETA SHRIWAS* AND RAJU CHOUKSE**

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Abstract:

Vaginal infections (vaginitis, Candidal vaginitis, or Candidal vulvovaginitis) are very common gynecological disorders caused by yeast. Over 90% of vaginal yeast infections are caused by the species known as *Candida albicans*. The present study was aimed to formulate and evaluate herbal cream formulation of *Plumeria pudica* leaf extract for the local treatment of vulvovaginal candidiasis. Herbal cream formulation was prepared using hydro-alcoholic extract having different polymers as gelling agent in varying concentrations. The formulated creams were evaluated for physical appearance, pH, viscosity, extrudability, spreadability, antifungal activity and in-vitro drug release study. Stability studies were carried out as per ICH guidelines for 3 months at different temperatures and humidity. It is observed that the cream formulation (F5) shows good antifungal activity and it was found to be best and stable among the prepared batches. It was inferred from the results that all the performed experiments confirm the applicability of herbal intravaginal cream for the local treatment of vulvovaginal candidiasis.

Keywords: Herbal cream; *Plumeria pudica*; Vaginal infection

FORMULATION AND EVALUATION OF TOPICAL ANALGESIC HERBAL GEL CONTAINING ROOT EXTRACT OF *PLUMERIA PUDICA* LINN

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Abstract

Analgesic herbs are natural pain reliever that reduce or eliminate pain. These pain relief herbs are available in the market in analgesic topical forms like essential oil and analgesic cream- that can be directly applied at the pain sites- as well as in form of capsules, tea and tinctures for pain relief. The present paper deals with the formulation and evaluation of topical analgesic gel containing hydroalcoholic extract of *Plumeria pudica* (roots). The topical gel was prepared and was further investigated for its analgesic activity using standard diclofenac gel.

Keywords: Analgesic activity; Topical gel; *Plumeria pudica*

TRADITIONAL HERBAL KNOWLEDGE AND CONSERVATION OF BIODIVERSITY FOR SUSTAINABLE LIVELIHOODS BY TRIBAL AND NON-TRIBAL COMMUNITIES IN CENTRAL INDIA**SUMEET DWIVEDI,* S.K. SHRIVASTAVA**

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Abstract

Human population i.e., tribal and non-tribal communities have been dependent on plants from ancient. This has enabled them to evolve a unique system of knowledge on the utilization and conservation of plant resources. Medicinal properties of herbs have been recognized and utilized by tribal and non-tribal communities for thousands of years. They possess a great deal of knowledge about medicinal plants and medicines for curing diseases. The farming practices of tribal and non-tribal people are truly sustainable in many ways. Their subsistence life style, local diet habits and dependence on rain fed irrigation have influenced them to cultivate and conserve the traditional cultivars or land races. During the study in various study sites of Central India it was observed that they have their own way of sustainable livelihoods and methods to conserve and use the plants traditionally. The present papers deals with all these aspects of tribal and non-tribal communities.

Keywords: Traditional; Tribal's Communities

FORMULATION AND EVALUATION OF BILAYER TABLETS OF METFORMIN AND ROSUVASTATIN

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Abstract

It was found that with the designing of bilayer tablet of Metformin HCl and Rosuvastatin Ca⁺² in which Rosuvastatin Ca⁺² in one layer releases instantly due to the presence of Croscarmellose sodium as superdisintegrating agent and Metformin HCl follows the release slowly by HPMC high molecular weight matrix in the order to match with the innovator product. Finally it was concluded that Bilayer tablet of Metformin HCl and Rosuvastatin Ca⁺² can be prepared by using optimized level of high viscosity of HPMC in sustained release layer and croscarmellose sodium in instant release layer. Three main excipients were selected for the purpose of improving desired characterization of granules and tablets such as solvent used, Methocel (K 4M and K 100M), and Lubricant. Eight batches (F1 to F8) were prepared with different excipients in varied concentration along with the simulation of the drug release profile of developed product with innovator's product was obtained in batch F8 by manipulating the process in which Methocel K100M was added in the formulation in two parts. F8 good flow property of granules and the desired drug release profile as similar to innovator's product. The project work was mainly aimed to design the formulation of immediate release tablets of Rosuvastatin. In batch R1 to R3 SSG was used in increased manner shows decrease in the disintegration time and in batch R4 to R6 Crospovidon XL was used in increased manner shows improve in disintegration time and better release profile in R6.

Keyword: Metformin Tablet; Bilayer Tablet; Met-Ros Bilayer; Antidiabetic Tablet; Met Granule

DEVELOPMENT OF NOVEL CARRIER SYSTEM FOR EFFECTIVE TREATMENT OF DIABETES WITH HERBAL PLANT EXTRACTS

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Abstract

Diabetes cannot be cured completely, Incidence of diabetes mellitus increasing day by day. Synthetic drugs which are used for the treatment of diabetes have many side effects and frequency of dosing is more. To overcome such problems novel carrier system has been chose. Herbal extracts have been widely accepted as the potential medicines with less side effects as compared to synthetic drug molecules. Biodegradable polymers are having wide use for the preparation of vesicular system to control the drug release pattern of drugs. "Polymeric microparticles" considered as novel carrier technique to control the release of herbal plant extracts from vesicular system. Extraction of crude drug (*Murraya koenigii*) done with successive solvent extraction method by using different solvents like Petroleum ether, ethyl acetate, chloroform, methanol, and ethanol. In phytochemical screening we found different constituents of the plant but leaf extract of murraya koenigii have hypoglycemic effect on streptozotocin induced diabetes in rats. Polymeric microparticles formulated with hot melt method and emulsification method. After characterization the microparticles which are made from hot melt method shows good results of drug release and entrapment efficiency. In the current research work microparticles has been developed of chitosan employed to enhance the drug release. Polymeric micopartcles were characterized and evaluated for antidiabetic activity. *Murraya koenigii* decrease the blood glucose level in albino rats.

Keywords: Diabetes Mellitus; Crude Drug; Micoparticles

PROCESS VALIDATION OF ORAL NON STERIODAL ANTI INFLAMMATORY DRUG –IBUPROFEN

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Abstract

The purpose of this research was to provide documented evidence that the manufacturing process of Ibuprofen 400 mg coated tablet meets the predefined control parameters. This involves in-process monitoring of critical processing steps and end product testing of current production can document evidence to show that the manufacturing process is in a state of control. The objective of the study is to form a basis for written procedures for production and process control which are designed to assure that the drug Ibuprofen 400 mg coated tablet have the identity, strength, quality and purity they purport of are represented to possess. The critical parameters identified and evaluated were dry mixing, blending, preparation of granulating agent and compression .These parameters were evaluated by challenging its lower & upper release specification as per validation master plan. Three initial process validation batches of same size, method, equipment & validation criteria was taken. Results obtained with process validation data provides high degree of assurance that manufacturing process produces product meeting its predetermined specifications and quality attributes, thereby decreasing the need for processing and customer complaints. It also provides documented evidence for the operation sequence of manufacturing process and to determine the critical parameters and variables in the process of manufacturing of the tablets.

Keywords: Ibuprofen; Process Validation; Critical parameters; Validation Master plan

NOVEL TECHNOLOGY FOR TRANSDERMAL DRUG DELIVERY SYSTEMS BY SONOPHORESIS**RITA BHARDWAJ*, SHIKHA SHRIVASTAV, GIRVAR KELKAR, ATUL PAL, REVATHI A GUPTA****Institute of Pharmacy, Dr. A.P.J. Abdul Kalam University Indore Bypass Road, Arandia Village, Post Jhalaria, Indore, Madhya Pradesh****Email: rita.bhardwaj06@gmail.com**

Abstract

Transdermal drug delivery is an alternative approach in comparison with conventional oral drug delivery systems. However, the stratum corneum, the outermost layer of the skin, acts as a barrier that limits the penetration of substances through the skin. Applications of ultrasound to the skin increase permeability (sonophoresis) and facilitates the delivery of a variety of substances addicted to and through the skin. Generation of ultrasound and mechanism of sonophoresis with particular emphasis cavitation, convective transport, and mechanical effects also included. Sonophoresis, namely transdermal drug delivery and transdermal monitoring. Low frequency sonophoresis or ultrasound is defined as sonophoresis or ultrasound at a frequency that is less than 2.5 MHz, more typically less than 1 MHz, more preferably in the range of 20 to 100 kHz. . It reduces pain, bio hazardous waste, and risk of infection. Most importantly, needle-free drug delivery generally increases patient compliance. The present paper highlights the recent advancements in the field of sonophoresis, its mechanism and applications.

Keywords: Sonophoresis; Epidermis; Ultrasound; Needle-Free Drug delivery system.

A PROCESS VALIDATION OF NEBIVOLOL HYDROCHLORIDE TABLETS**JEEVAN PATEL*, SHIKHA SHRIVASTAVA, REVATHI A GUPTA****Institute of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore (M.P.)-India****Email: jeevanmonu18@gmail.com**

Abstract

The objective of the study is to validate written procedures for production and process control which are employed to assure that the drug Nebivolol Hydrochloride tablets 5 mg have the identity, strength, quality and purity they purport of are represented to possess. It is done by checking and controlling the critical parameter in process and by evaluation of final product. The process validation is done as per specifications. All processing parameters are compared with the standard specifications, the manufacturing process parameters sieve integrity, appearance, bulk and tapped density, blend uniformity and assay, weight variation, hardness and thickness, Friability, disintegration time, packaging parameters & the results showed that the all parameters are within the limits. It was concluded that the process validation data of Nebivolol Hydrochloride tablets 5 mg showed that there was no significant variation between parameters of different batches. Thus the process is validated.

Keywords: Nebivolol Hydrochloride; Lactose monohydrate; Maize starch; Croscarmellose sodium; HPMC; MCC; Silica (colloidal anhydrous); Magnesium stearate.

ALDOSE REDUCTASE INHIBITORY POTENTIAL OF AQUEOUS AND METHANOLIC EXTRACT OF SEEDS OF ABELMOSCHUS ESCULENTUS LINN.KUSHAGRA DUBEY^{1*}, RAGHVENDRA DUBEY², ARUN GUPTA²¹Smriti College of Pharmaceutical Education, Indore (M.P.), ²Faculty of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore (M.P.)

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Abstract

To study the inhibitory effect of aqueous and methanolic extract of seeds of *Abelmoschus Eesculentus* Linn. on aldose reductase of goat lens. Goat lens were isolated from goat eye and enzyme preparation was done by the method of Hayman and Kinoshita in which homogenate was prepared and centrifuged. Clear supernatant was obtained which was used for aldose reductase inhibitory assay. From the result it was observed that both the extracts show significant aldose reductase inhibitory activity but methanolic extract is more potent inhibitor than aqueous extract and IC_{50} value of both the extract was found to be $36 \mu\text{g/ml} \pm 1.10$ and $98 \mu\text{g/ml} \pm 1.62$ respectively. Quercetin was used as standard. Thus it was concluded that methanolic extract of seeds of *Abelmoschus Esculentus* exhibit more potent inhibitory effect on aldose reductase in the goat lens in vitro than aqueous extract.

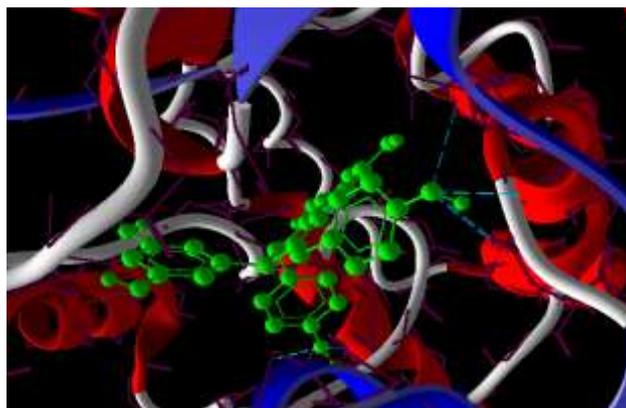
Keywords: Quercetin; *Abelmoschus Eesculentus* Linn; Aldose reductase; Methanolic extract

REVERSE PHARMACOGNOSTICAL EVALUATION OF *CISSUSQUANDRANGULARIS*SHIKHA JAIN^{1*}, REVATHI ARUN GUPTA², BHANWAR LAL JAT¹¹Bhagwant University, Ajmer (R.J), India.²Sri SatyaSai Pharmacy Research Institute, Indore (M.P.), India

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Abstract

Reverse pharmacognosy aim is to find new biological targets for natural compounds by virtual or real screening and identify natural resources that contain the active molecules. We report herein a study targeted on the chemical compounds available on *C. quadrangularis* responsible for antidiabetic activity. *Molegro Virtual Docker* (MVD) docking software was used to identify putative binding biological targets for binding of *C. quadrangularis* derived biologically active compounds. In the present study we focused on the identification of biological properties of parthenocissin a major component isolated from plant. Among the 200 screened proteins five targets were retained: Peroxisome proliferator-activated receptor alpha (4ema), Glucokinase (5brh), Glycogen Phosphorylase (1a8i), Dipeptidyl Peptidase IV (1orv) and Fructose-1, 6-bisphosphatase (1umg). Binding test was realized for these five protein candidates as well as one reference. The predictions made by MVD were consistent with the experimental results, significance that these five targets can be modified by an extract containing this compound in an appropriate concentration. These results exhibit that reverse pharmacognosy and its inverse docking component is an influential tool to identify biological properties for natural molecules and hence for plants containing these compounds.



Docking of parthenocissin with glycogen phosphorylase enzyme (1a8i)

Keywords: Antidiabetic activity; *Molegro Virtual Docker*; Glucokinase; Reverse pharmacognosy

IN SILICO STUDIES ON PLANT DERIVED COMPONENTS OF *CISSUS QUADRANGULARIS* AGAINST GLYCOGEN PHOSPHORYLASE ENZYME

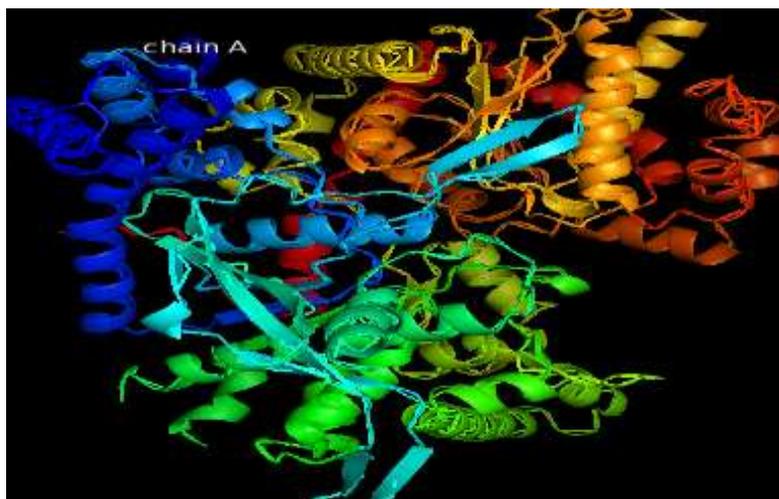
SHIKHA JAIN ^{1*}, REVATHI ARUN GUPTA², BHANWAR LAL JAT¹

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Abstract

Cissusquadrangularis L. is a succulent plant of family *Vitaceae* commonly found in tropical and subtropical xeric wood. It is a fleshy, cactus-like liana widely used as a common food item in India. The plant is prescribed in the ancient Ayurvedic literature as a general tonic, analgesic, with specific bone fracture healing properties. Glycogen phosphorylase enzyme is an oxidoreductase enzyme having a role in antibiatic responses. The objective of this study was to show the drug-likeness and the binding of *Cissusquadrangularis* derived biologically active new compounds against the glucose level associated target glycogen phosphorylase enzyme. The 3D crystal structure of glycogen phosphorylase enzyme protein structure was taken from PDB database (PDB ID: 1a8i). Docking studies had been carried out through automated docking software MVD 2010, version 4.2.0. The compound shows interactive binding to the active site region of glycogen phosphorylase and have better or equivalent binding features compared to already known inhibitory compounds namely Glibenclamide. These newly derived compounds from plant shows potential medicinal values with anti-diabetic properties which form understandings to develop new leads for glycogen phosphorylase inhibitors.



Glycogen phosphorylase enzyme (PDB ID: 1a8i)

Keywords: *Cissusquadrangularis L.*; Glycogen phosphorylase; Glibenclamide; PDB database

AIDS AN OVERVIEW CHEMOTHERAPY AND VACCINES**SHIKHA SHRIVASTAVA*, SACHIN VERMA, JEEVAN PATEL, RAHUL JAIN****Institute of Pharmacy, Dr. APJ Abdul Kalam University, Indore, MP****Email: shikha.shri029@gmail.com**

Abstract:

A vaccine is any preparation that produce immunity by stimulating the production of antibodies..Injection is the common method of administrating vaccine. Edward Jenner gave the term vaccine and vaccination. He showed that inoculating people with material from skin lesions caused by cowpox i.e. L.Vaccines of cows protected them from the highly contagious & frequently grave disease Small pox. These are kinds of vaccines are killed whole organisms, attenuated organisms or Toxoids Eg. Diptheria & Tetanus. Many different infections in people can be prevented by Vaccine for HIV. If a person is exposed to one of those germs later, the vaccine may protect them from getting infection. Thus, vaccines work by causing a person's immune system. There are many difficulties in developing HIV vaccine. The first & person ever to be cured of HIV/AIDS is a leukemia patient treated in Berlin with HIV resistant stem cells. HIV infect a kind of white cell called a CD4 lymphocyte ,a key player in immune response what it makes HIV so devious is that it infect people that are supposed to rub out viral infections. Most vaccine protects against disease, not against infection; HIV infection may remain latent for long periods before causing AIDS.

Keywords: HIV Vaccine; Vaccination.

EVALUATION OF WOUND HEALING ACTIVITY OF POLYHERBAL OINTMENT**DEEPA VARANDANI*, RAKESH BARIK, SAURAV JAIN****COP, Dr. APJ Abdul Kalam University Indore****Email: deepani44@gmail.com**

Abstract:

In the present study, a poly herbal ointment was prepared and evaluated for wound healing activity. The various plants used were *Nigella sativa*, Linn. (seeds), *Linum usitatissimum*, Linn.(seeds), *Psidium guajava* (leaves) and *Murraya koenigii* (leaves). These were procured from the local market, Indore, and authenticated at Government Agriculture College, Indore. The plant parts were first defatted with petroleum ether and then extracted with ethanol using Soxhlet apparatus. The ointment was prepared by fusion method. Evaluation parameters were carried out for the prepared ointment. Primary skin irritation study was performed as per the standard procedure. The various models used to study wound healing activity included dead space wound model and estimation of total hydroxyproline content. Histopathological study was also carried out. Higher hydroxyproline content was seen with polyherbal ointment treated group in dead space wound model. Increased amount of hydroxyproline was observed in treatment group justifying increased collagen content. Since hydroxyproline is the direct estimation of collagen synthesis it supports the wound healing activity of polyherbal ointment. The histopathology study also supplemented the results obtained.

Keywords: *Nigella sativa*; *Linum usitatissimum*; *Psidium guajava*; *Murraya koenigii*

FORMULATION AND EVALUATION OF HERBAL TOOTHPASTE**MALVIYA SMRITI*, RAGHVENDRA DUBEY, PANKAJ NAGAR, YASHRAJ YADAV**

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Abstract

In addition to the herbal active ingredients listed above, most tooth pastes contain binders and preservatives to make sure they do not dry out. They also have different flavour ingredients, like mint, bubble gum, or cinnamon to make the toothpaste more pleasant to use. Whitening toothpastes may contain special abrasives that are designed to clean surface stains better than standard ingredients. Sensitive teeth toothpastes usually have ingredients like strontium chloride or potassium nitrate, which block pain receptors in your teeth. Through the action of mild abrasives all toothpaste helps to remove surface stain. Whitening toothpastes contain polishing agents to improve tooth appearance by removing surface stains. They do this through gentle polishing, chemical chelation, or some other non bleaching action. ADA seal on the toothpaste reveals that the toothpaste have been evaluated for safety and effectiveness. Herbal toothpaste is also one of the products. Toothpaste is the common product in our families and we hardly care to know about the product which we are using. Herbal toothpaste has numerous herbs which have ability to remove the plaque, freshen-up our breath and also prevent various gum diseases. No body wants to use chemicals, so we must go for natural alternatives available at least to save our tooth from decay. There are many advantages of herbal toothpastes.

Keyword: Neem; Clove; Tulsi; Amla; Ginger; Lemon Calcium carbonate

PREPARATION AND EVALUATION OF SOLID LIPID NANOPARTICLES LOADED WITH CURCUMIN FOR TARGETED DELIVERY TO PANCREATIC CANCER

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Abstract

The present study was aimed at preparation and evaluation of solid lipid nanoparticles loaded with curcumin for targeted drug delivery in the management of pancreatic cancer. Curcumin loaded SLN were prepared by hot homogenization followed by ultrasonication method. In these nanostructures, the drug can be entrapped or attached to the solid lipid nanoparticle matrix. Preformulation studies were carried out in terms of tests for identification, solubility and quantitative estimation of drug. For the anticancer study, the cell lines were procure from Indian Institute of Advance Research, Gandhinagar and in vitro cytotoxicity assay was performed. MTT assay was carried out to evaluate the anti cancer potential. The study showed positive results in terms of targeting the SLN loaded curcumin to the pancreatic cells as well as in the management of cancer.

Keywords: Curcumin; Nanoparticles; Ultrasonication; *In-Vitro* Cytotoxicity

**ANTIBACTERIAL POTENTIAL OF ETHANOLIC EXTRACT OF HOLOSTEMMA ADA KODIEN
SCHULTS**YASODHA KRISHNA JANAPATI^{1*}, RAGHVENDRA DUBEY²¹School of Pharmacy, Dept. of Medicinal Chemistry, Mekelle University, CHS, Ethiopia. ²College of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore, India

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Abstract

The Ethanolic extract of *Holostemma ada Kodian*, family Asclepiadaceae was screened for antibacterial potential using disc diffusion method against both gram-positive and gram-negative bacteria at concentrations 20-100µg/ml. The extract showed zone of inhibition against *Staphylococcus aureus*, *Micrococcus luteus*, *Salmonella typhi*, *Klebsiella pneumoniae*, *Escherichia coli* and *Pseudomonas aeruginosa*. The Zone of inhibition was found at concentration 20, 40, 60, 80 and 100µg/ml. Extract was most active against *Escherichia coli* and least active against *Bacillus subtilis*. The MIC found in the range 11-16 µg/ml.

Keywords: *Holostemma ada Kodian*; Antibacterial activity; Disc diffusion method; Phyto-chemical studies.

FORMULATION AND EVALUATION OF HERBAL GEL CONTAINING COMBINATION OF TOMATO AND GINGER EXTRACTS AS AN ANTIHYPERPIGMENTATION AGENTS

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Abstract

Tomato extract act as a free radical scavenger, inhibiting the destruction of extracellular molecules that counteracts the harmful effects of solar radiations whereas Ginger has a high antioxidant and restorative properties there by protecting the skin from sunlight's radiation that can induce the hyperpigmentation and other skin related abnormalities. Tomato and Ginger extract has been proven in decreasing melanin content, but their single extracts effects were lower than their combination effect. This study aimed to investigate the anti-hyperpigmentation effect of the combination of Tomato and Ginger in a Herbal Gel formulation. The antihyperpigmentation activity from an ethanol extract of Tomato and Ginger gel showed by IC₅₀ values. In this research we have been made the gel formulation from ethanol extract of Tomato and Ginger in various concentration : 1.0%, 2.0% and 3.0%. Based on the evaluation of the gel formulation we conclude that an ethanol extract from Tomato and Ginger can be formulated as gel formulation and has been fulfill the essential requirements of pharmaceutical formulation. From the three gel formulation we found that the three formulation has characteristics such as the stability on storage either in cold temperature (5oC) or room temperature (25oC), organoleptically, homogeneity and pH. The result of this research, the IC₅₀ value from the Gel containing Tomato and Ginger extract is 234.16 µg/ml and the standard M® IC₅₀ value is 185.34µg/ml. This value shows that the antihyperpigmentation activity from an ethanol extract of Tomato and Ginger extract gel is lower than the standard M®. But a single antihyperpigmentation activity from ethanol extracts of Tomato and Ginger it self has IC₅₀ value 136.48 µg/ml. The ethanol extracts of Tomato and Ginger formulated in gel formulation were produced significant antioxidant activities and tyrosinase inhibition. The results demonstrated that the formulated herbal gel and its ingredients were consistent in quality and can be easily used as cosmetic product for its antihyperpigmentation effect .

Keywords: Antihyperpigmentation; Enzyme Tyrosinase; Extracts of Tomato; Ginger.

DEVELOPMENT AND VALIDATION OF STABILITY INDICATING ASSAY METHOD FOR ESTIMATION OF DAPAGLIFLOZIN AND ITS DEGRADANTS BY RP-UHPLC**AVNISH JAIN*, LOVE K. SONI, RAJESH SHARMA**

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Abstract

This work aims to develop simple, accurate, precise, rapid and economical stability indicating RP-UHPLC assay method for Dapagliflozin which is sodium glucose co-transporter inhibitor used for the treatment of major metabolic disorder diabetes mellitus. In this method estimation was performed by using THERMO UHPLC with ultimate 3000 DAD detector fitted with Hypersil Gold C-18 column (150*4.6mm, 3microneparticle size). High resolution isocratic separation was achieved by using mobile phase consisting of Acetonitrile: di-potassium hydrogen phosphate with pH-6.5 adjusted with orthophosphoric acid (50:50) at a flow rate of 1.25 ml/min. Retention time was found to be 1.35 min. with more than 100000 N plates/meter column and tailing factor 1.05%. Dapagliflozin showed excellent linearity ($r^2 > 0.999$) over 50-150 $\mu\text{g/ml}$ concentrations. The forced degradation of Dapagliflozin was carried out by using acid hydrolysis, base hydrolysis, oxidative degradation and thermal degradation. In all degradation conditions applied Dapagliflozin was well separated from its degradants. Study showed that there is significant degradation under oxidative and thermal conditions. This method was found to be simple, accurate, economical, robust and reproducible. This developed method has been validated for linearity, accuracy, precision, and LOD, LOQ and system suitability according to ICH guidelines.

Keywords: Dapagliflozin; ICH guidelines; Hypersil Gold C-18 column; RP-UHPLC

FORMULATION AND EVALUATION OF AN ANTI-RETROVIRAL DRUG AS NANOCRYSTAL SUSPENSION USING TOP DOWN APPROACH

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Abstract

Efavirenz is a non-nucleoside reverse transcriptase inhibitor and categorized in to BCS class II drug. Efavirenz exhibit low and variable bioavailability due to its poor aqueous solubility. So, it needs enhancement in the solubility, dissolution rate and bioavailability to derive its maximum therapeutic efficacy. The aim of the present investigation was to enhance the solubility, dissolution and stability of nanocrystal suspension (NCS) of efavirenz using a non-ionic stabilizer. Nanocrystal suspensions were prepared by high pressure homogenization technique (HPH) using PVP K 30 as stabilizer. Efavirenz was lyophilized and added to water to prepare micro suspension prior to homogenization step. Optimized NCS was evaluated for particle size, polydispersity index, zeta potential, surface morphology and drug release and pharmacokinetics parameters. Particles with average size of 49.3 nm, having PDI of 0.214 were produced. Which indicates good particles size distribution as the values obtained was below 0.4. Zeta potential value was found to be -31.2mV which shows good thermodynamic stability of optimized NCS formulation. Further results obtained from differential scanning calorimetry and an X-ray diffraction study again confirms the stability of NCS formulation. The release study revealed that $83.54 \pm 1.37\%$ drug released from optimized formulation compared to $9.25 \pm 2.14\%$ of physical mixture and $4.98 \pm 3.28\%$ of pure drug. Optimized formulation exhibits first order drug release and mechanism of drug release was found super case II transport as 'n' value obtained 1.12 which is higher than 1. Animal study results reveals better permeation of drug compared to physical mixture and pure drug as peak plasma concentration of optimized NCS was found 2663.92 ± 9.218 compared to 632.38 ± 5.621 of pure drug. Stability studies showed that there was no significant change in particle size, PDI, zeta potential and drug content over a period of six months as the values of particle size (48.58 ± 2.01), PDI (0.220 ± 0.008), zeta potential (-32.2 ± 0.76) and drug content (97.6 ± 1.67) were within range of the values of Zero day. Efavirenz nanocrystal suspension was successfully prepared by HPH method and evaluated against various parameters. Obtained results indicated its potential for an attempt towards successful nanocrystal formulation.

Keywords: Nanocrystal suspension; High pressure homogenization; Drug release; Zeta potential

FORMULATION AND EVALUATION OF AN ORAL PYRAZINAMIDE CUBOSOMEMONIKA OLA^{1*}, V S BELGAMWAR²

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Abstract

The objective of the present research work was to formulate and evaluate cubic formulation of Pyrazinamide to improve the bioavailability of the drug. It helps to increase patient convenience and reduction in the side effect of the drug by sustaining the release. By Top down approach using GMO as lipid phase vehicle, Poloxamer 407 as stabilizer and distilled water as aqueous phase by varying the concentrations of GMO and Poloxamer 407 different formulations of Pyrazinamide cubosomes were prepared. The effect of stabilizer concentration was investigated to determine their effects on the morphological and dimensional characteristics of cubosomes. At the optimized homogenization conditions, Pyrazinamide cubosomes with a mean particle size of $180 \text{ nm} \pm 4.9 \text{ nm}$ were obtained. The formulations were evaluated for particle size, surface morphology, encapsulation efficiency, in-vitro dissolution and diffusion studies. Structural evaluation was confirmed that loading of Pyrazinamide shows no disturbance in the structure of formed cubosomes. The encapsulation efficiency determined by UV spectroscopy and further confirmed that Pyrazinamide was successfully encapsulated in Cubosomes.

Keywords: Pyrazinamide; Cubosomes; GMO; Poloxamer 407; Top down approach; Homogenization

NOSE TO BRAIN TARGETING OF NANOSTRUCTURE LIPID CARRIER OF QUERCETIN FOR TREATMENT OF BRAIN TUMOR

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Abstract:

Cancer is the most distressing and life threatening disease that enforces severe death worldwide. Brain tumour is the second leading cause of the cancer related deaths in children and young adults. Successful chemotherapy of cancer depends on the delivery of sufficient concentrations of an effective drug to tumour cells without causing intolerable toxicity to patient. Studies shows that direct delivery of the drug molecules from nose to brain is of vital importance for the targeted delivery to CNS by bypassing BBB. Thus the aim of this study was to prepare and characterize quercetin loaded NLC and to study its brain distribution. The main objective of the study was to formulate nanostructured lipid carriers of the quercetin for direct nose to brain delivery of drug as tool for the targeted delivery. Novel QUE-NLCs were formulated using High Pressure Homogeniser. Formulation was evaluated for various physicochemical properties such as particle size, zeta potential, drug loading, percent entrapment efficiency, Morphology study, in vitro drug release profile, histopathology analysis. In vitro cytotoxicity against astrocytoma-glioblastoma cell line (U373MG) and brain distribution study was evaluated. QUE-NLC exhibited a particle size of 118.2 nm, with PDI of 0.220, zeta potential of -20.1mV, an entrapment efficiency of 88.74%. QUE-NLC exhibited sustained delivery of drug. Significant targeting to brain was achieved when compare to quercetin. The result showed that NLCs might be the promising approach for the nose to brain delivery of quercetin.

Keywords: Quercetin; *In-vitro* cytotoxicity; High Pressure Homogeniser; Brain tumour

TRADITIONAL BENEFITS AND PHYTOPHARMACOLOGICAL SIGNIFICANCE OF *PIPER LONGUM* L. (PIPALAI)**DARSHANA SHARMA* AND SUMEET DWIVEDI**

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Abstract

Plants have been the source of medicines since ancient history. *Piper longum* L. (Piperaceae), commonly known as pipalai (H) & long pepper (E), is widely distributed in India. The plant is native to be South Asia and is found both wild as well as cultivated, throughout India. Immature spikes (fruits), roots and seeds are used traditionally for the treatment of gastric troubles, during pregnancy and against microbial infection. In traditional system of medicine, the plant plays a unique role in the treatment of human and animal disorders. Plant contains large number of alkaloids and related compounds, the most abundant of which is piperine, together with methyl piperine, iperonaline, piperettine, asarinine, pellitorine, piperundecalidine, piperlongumine, piperlonguminine, refractomide A, pregumidiene, brachystamide, brachystamide-A, brachystine, pipericide, piperderidine, longamide and tetrahydropiperine, terahydro piperlongumine, dehydropiperonaline piperidine. The present reviews the traditional claims and phytopharmacological significance of the plant.

Keywords: Traditional; Phytochemistry; *Piper longum*

INTERVENTIONS OF THE CLINICAL PHARMACIST IN THE TRANSITIONAL CARE ENTITY FOR PATIENTS

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Abstract

To discuss the role of the clinical pharmacist in hospital care of critical Renal Failure patients. Interventions by the pharmacists have always been considered as an important contribution by the health care community in the patient care process by reducing the medication errors, rationalizing the therapy and reducing the cost of therapy. The principal objective of this study was to define the number of patients and prescriptions plan as well as types of prescription errors intervened by the dispensing pharmacists. Pharmacists provide services and clinical interventions must be shown to decrease the risk of potential adverse drug events and increase patient outcomes. This review proves that pharmacists may contribute to generous healthcare savings through a range of settings. Coming high-quality financial assessments with vigorous methodologies and study strategy are essential to design the pharmacist facilities have important clinical advantages to patients and validate the highest cost savings for healthcare finances. Based on the outcomes we conclude that the role of pharmacist in refining the health care system is crucial. We mention extra number of such research based studies to take responsiveness among health care professionals, deliver solution to the prescription and dispensing problems, as it can also improve the documentation system, emphasize the importance of it, reduce prescribing errors, & update the knowledge of pharmacists and other health care professionals. To determine the impact of clinical pharmacist intervention on the care of patients with Renal Failure disease, a potential design was applied to compare a standard care group with a clinical pharmacist care group using 50 Renal Failure patients per group over a 3-month period. The pharmacist responsible for patient counseling reviewed the patient records, collected demographic data, clinical data as well as medical history, diagnosis and medication plan. All interventions made by the clinical pharmacist were analyzed in terms of potential cost savings for the patient. Pharmacists' intervention and comments written on the prescriptions and classify it into the following categories: (1) Change medication order; (2) Medication selection recommendation; (3) Prescribing medication without indication; (4) Therapeutic duplication; (5) Overdose; (6) Sub-therapeutic dose or duration; (7) Addition of another medicine; (8) Transcription error; (9) Administrative issues. In several cases pharmacists have intervened to reduce the cost of medications to improve the patient compliance and affordability. One of the best impact of clinical pharmacist providing patient counseling had a positive impact on medication adherence and quality of life. Intervention improved the balance between necessity and concern beliefs about medication, & efficiently resolved practical barriers in medication taking thereby improving medication. A clinical pharmacist intervention has a significant impact on the cost of drug therapy & patient outcomes. The results support the usefulness of pharmaceutical care services for all hospitalized Renal Failure patient.

Keywords: Health of the elderly; Drug therapy; Critical care; Pharmacists intervention; Out-patient pharmacy.

PREPARATION AND EVALUATION OF ULTRATHIN MULTILAYERED CAPSULES FOR THE TOPICAL DELIVERY OF CISPLATIN

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Abstract

As the development of new molecule and to ensure their safety and efficacy is a time consuming process, drug delivery system is of particular interest. The aim of the present study is to develop smart, functional, organised self assembling nanostructures, ultrathin multilayered capsules with the potential to be used as drug delivery system for the topical delivery of cisplatin. These ultrathin multilayered capsules were formulated by consecutive adsorption of polyanion (0.1% Sodium alginate) and poly cation (0.1% Poly Allyl Amine Hydrochloride) on to core particles (0.2% Calcium Phosphate) The prepared ultrathin multilayered capsules were characterized for the shape and surface morphology, average capsule size, drug entrapment studies, percentage yield, zeta potential, In vitro release and stability studies. Optimized ultrathin multilayered capsules were loaded in carbopol gel and were evaluated for gelling properties. The shape and surface morphology of prepared ultrathin multilayered capsules were observed by using SEM and TEM. The average capsule size was found to be $8.4 \pm 0.57 \mu\text{m}$. The maximum drug entrapment was found to be 37.62 %. The percentage yield 72.12 %. The zeta potential of the capsule alternated between -20.4mv (Na alginate) and +29.6 mv (PAH) with each coating step, suggesting multilayered growth of the particles. Percent cumulative *in vitro* drug release was found to be 67.08 % after 24hrs. From the above study significant results were obtained and it can be concluded that the developed ultrathin multilayered capsules formulation show controlled drug release of cisplatin and thus helpful in reducing effecting dose and thus side effects.

Keywords: Topical Delivery; Ultrathin multilayered capsules; Controlled drug delivery; Consecutive adsorption; Cisplatin

SYNTHESIS, CHARACTERIZATION AND IN VITRO ANTIMICROBIAL ACTIVITY OF SOME NOVEL SCHIFF'S BASE OF 1-BENZYL-7-AZAIATINS DERIVATIVESSIDDHARTHA KUMAR P^{1*}, BASAVESWARA RAO M. V¹, HARINATHBABU V²¹Krishna University, Machilipatnam, Krishna district, Andhra Pradesh, India—521001. ²G Pulla Reddy College of Pharmacy, Mehedipatnam, Hyderabad, Telangana, India. Email: siddarth.pharma@gmail.com**Abstract**

From the literature, it is understood that Isatin (1H-indole-2, 3-dione) shows diverse significance in the field of restorative science as strong chemotherapeutic operators. The 7 aza isatin ring is a promising auxiliary moiety found in a few organic dynamic mixes. In this a progression of novel 7 aza isatin substituent joining distinctive aromatic aldehydes were combined and described by FTIR, ¹H NMR, Mass spectroscopy and bases of essential investigation. Also, the *in vitro* antibacterial and antifungal properties were tried by utilizing the disc diffusion technique. A series of novel Schiff's base of 7- aza isatin derivatives (Va-Vp) were synthesized by benzylation of 7-azaindole using Potassium hydroxide, dimethyl sulphoxide, benzyl chloride followed by oxidation of II using N-bromo succinimide, anhydrous dimethyl sulphoxide. Resultant III extracted by dichloromethane three times, then treat with 1-(4-aminophenyl)ethanone were dissolved in methanol in equimolar quantities and refluxed for 5 hrs. On cooling, the crystalline solid separated out was collected IV; To this equimolar quantity of each of distinctive aromatic aldehydes, methanol added was refluxed for 24 hrs. to give titled compounds. The chemical structures of synthesized compounds were confirmed by IR, ¹H NMR, Mass and elemental analysis and these were screened for their *in vitro* antibacterial and antifungal activities. The results of antibacterial and antifungal activities showed that some of the synthesized compounds were exhibited promising antimicrobial activities. All the newly synthesized compounds were screened for antimicrobial activities by turbidity method using Ampicillin and Clotrimazole as standard against gram positive, gram negative bacteria and fungi.

Keywords: Schiff's base; 7-Aza Isatin; Antibacterial activity; Antifungal activity.

STRUCTURE-FUNCTION RELATIONSHIPS OF INHIBITION OF HUMAN CYTOCHROMES P450 3A4, CYP2C9 BY 100 FLAVONE DERIVATIVES

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Abstract

In this study, we further examined and compared the structure-function relationships of the inhibition of human P450s 2C9, 3A4 and 2C9 with complex, with a total of 100 Phenolic compounds. The present studies show that structurally diverse flavonoid derivatives inhibit human P450 CYP2C9, 3A4 and CYP2C9 in complex to different degrees, depending on the enzymes and inhibitors and that there are different mechanisms of inhibition of these P450s by flavonoids. The presents of bis-phenolic (bis-falvone: unix-26, 29, 61) groups was found to surpriselly increase inhibition potency toward these P450 enzymes. Some of a 5, 7-dihydroxyl group in the A ring of flavone was found to increase the inhibition potency toward these P450 enzymes (unix-4, 80). Molecular docking studies suggest that there are different orientations in the interaction of the six flavonoids with the five P450 enzymes examined and that two or more mechanisms are possible to explain how various flavonoids inhibit individual P450 enzymes differently. Molecular docking studies suggest that there are different mechanisms involved in the interaction of various flavonoids with the active site of P450s, thus causing differences in inhibition of these P450 catalytic activities by flavonoids.

Key words: Flavonoids; Human cytochromes; Molecular docking,

IDENTIFICATION AND MOLECULAR DOCKING STUDY OF NOVEL THIAZOLIDINEDIONE ANALOGS AS ALDOSE REDUCTASE INHIBITORS

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Abstract

Aldose reductase (ALR) enzyme plays a significant role in conversion of excess amount of glucose into sorbitol in diabetic condition, inhibitors of which decrease the secondary complication of diabetes mellitus. The AR active site can adapt itself to bind firmly to special inhibitors; this happens together upon binding to the inhibitor's hydrophobic, hydrophilic heads, and at the specificity pockets of AR, and capable to alter their nature through special conformational changes of the identical residues. Newer (E)-2-(5-(4-(benzoyloxy)-2-methoxybenzylidene)-2,4-dioxothiazolidin-3-yl)acetic acid derivatives were applied for molecular docking studies. The molecular structure of aldose reductase active domain was arranged from the synchronized sets of 4LAU. The structure of protein and ligands were prepared using ChemBioDrawUltra 8.0. Docking method was done and optimized using software Molegro Virtual Docking (MVD). A docking study was applied to envisage the interactions between the aldose reductase and designed series of compounds. Docking results were analyzed by comparing the moldock score, rerank score and hydrogen bond interaction. The results of this present study might be useful in the designing of more potent thiazolidinedione derivatives as Aldose Reductase Inhibitor. (E)-2-(5-(4-(benzoyloxy)-2-methoxybenzylidene)-2,4-dioxothiazolidin-3-yl)acetic acid analogs shows comparable ARI activity. These new class of thiazolidinedione compounds might be address the diabetic complications with safety.

Keywords: Aldose reductase inhibitors; Docking; Diabetes mellitus; Thiazolidinedione

**IN-VITRO ANTHELMINTIC ACTIVITY OF POLYHERBAL TABLET CONTAINING
HYDROALCOHOLIC EXTRACT OF *ABULTION INDICUM*, *HIBISCUS ESCULENTUS* AND
*ABELMOSCHUS MOSCHATUS***

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Abstract

Helminthic infections are now being recognized as cause of many acute as well as chronic ill healths among the various human beings as well as cattle's. More than half of the population of the world suffers from infection of one or the other and majority of cattle's suffers from worm infections. Traditional system of medicine reports the efficacy of several natural plants in eliminating worms, keeping this view the present work was conceived by us to formulate and evaluate the effective anthelmintic drug. The present work was done with the aim to formulate polyherbal tablet in different batches viz., F1, F2, F3, F4 & F5 containing hydroalcoholic extract of *Abultion indicum* (Leaves), *Hibiscus esculentus* (Flowers) and *Abelmoschus moschatus* (Seeds) and to evaluate anthelmintic activity of tablet using adult earthworm *Pheritima posthuma*. The tablet (F1 to F5) in different proportion of different concentration were tested which involve determination of paralysis time and time to kill the worms. Piperazine citrate was used as standard and it was found that the Polyherbal tablet (F4) having significant and maximum activity is when compared to standard drug.

Keywords: Anthelmintic; Polyherbal tablet; Extract

A SYSTEMATIC REVIEW OF CLINICAL TRIALS OF A MEDICINAL PLANT FOR VARIOUS INDICATIONS

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Abstract

To brief and critically evaluation of the evidence from various clinical trials for the safety and efficacy of individualized herbal medicine in different indication. Literature Search for make rationalized electronic databases by Google Scholar, Pub Med, Science Direct and WHO ICTRP up to March 2018. Extracted database have information of medicinal plant which has pharmacological properties and investigated under clinical trials of individualized or one or more combinational medicinal plant for various indication. The assessment of methodological quality by two or more authors and best evidence synthesis. A total of 50 different herbal part and their product clinical trials were identified. Statistically, no significant trends favoring active over clinical treatment in various indication like pain swelling, arthritis, and another chronic disease Individualized treatment was superior to various outcome measures in the treatment of gastritis and irritable bowel syndrome but was inferior to standardized herbal treatment in all outcomes. Individualized herbal treatment was no better than placebo in the prevention of chemotherapy of tuberculosis and chemotherapy-induced toxicity. There is evidence regarding the effectiveness of individualized herbal medicine and no convincing evidence to support the use of individualized plant product in any indication

Keyword: Medicinal plant; Clinical trial

OVERVIEW OF THE PATENTING AND RESEARCH AND DEVELOPMENT IN DEVELOPING COUNTRIES

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Abstract

A patent is a property rights governed by sovereign state to the inventor of a novel, non obvious and useful invention. Developing countries historically have lacked the institutions and policies that encourage and make possible the patenting and commercialization of inventions of public sector employees. National patent offices of many developing countries are under-funded and under-staffed, making it difficult to achieve deliverables. Due to the cumbersome and expensive formalities of global patent, it is not impossible, for developing country inventors to obtain patent protection in the world's big markets. The lack of Patent protection for pharmaceutical products in many developing countries also is a product of import substitution policies. These policies led to national pharmaceutical markets being dominated entirely by local companies copying the drugs of developed country inventors. Many developing countries have the capacity to build research-intensive pharmaceutical industries capable of operating profitably by providing products directed to the common to their own nationals that can be supported by the economics of the local market. Effective patent protection must be made available to the local industries, the commercialization of publicly funded research must be encouraged, and compulsory licensing must be kept to a minimum. These are measures to be incorporated for the strengthening of the local industries.

Keywords: Inventor; Patent Protection; Import substitution; Research Intensive

PATENTING IN INDIAN PHARMACEUTICAL INDUSTRY: AN OVERVIEW**SANDEEP SALODKAR*, RAKESH JATAV****Dr. A. P. J. Abdul Kalam University, Indore College of Pharmacy, Indore, Dr. A. P. J. Abdul Kalam University, Indore****Email: smsalodkar@gmail.com**

Abstract

Intellectual Property (IP) is a kind of intangible property created with the efforts of human mind or intellect. Intellectual Property Rights (IPRs) are the rights derived due to creation of the intellectual property. These rights are conferred upon the creator (inventor, author etc.) of these properties. It should be noted that although the intellectual property is intangible but the material form of the intellectual property which is tangible can only be protected through IP rights. Patent is one of the major forms of Intellectual Property Rights (IPRs) used in the pharmaceutical industry. IPR available in India are in the form of Trade mark, industrial design, geographical indication and copyright. Grant of patent in India is governed under the Patents Act, 1970. Significant changes were made time to time like provision of product patents after India signed TRIPS (Trade Related Aspects of Intellectual Property Rights) agreement in 1995. This review provides a brief overview of development of patent law in India as a consequence of TRIPS agreement. Criteria of patentability and different types of pharmaceutical patents currently being granted in India are described with the aim to provide the fundamental knowledge of pharmaceutical patenting to the researchers. The section 3(d) ensures that the new forms can be patented only if they are really meritorious, and thus patents shall not be granted for trivial inventions. It throws light on the Indian government's policy of rewarding the inventors/ researchers on their true intellectual efforts and at the same time preserving the public interest and making them available essential commodities such as drugs at affordable prices.

Keywords: Intellectual Property Rights; TRIPS; Inventor; Trivial Invention

GLOBAL SCENARIO IN PHARMACEUTICAL MARKET AND TRIPS**SANDEEP SALODKAR*, RAKESH JATAV****Dr. A. P. J. Abdul Kalam University, Indore, College of Pharmacy, Dr. A. P. J. Abdul Kalam University, Indore****Email: smsalodkar@gmail.com**

Abstract:

This paper gives the overview regarding the international controversy over patents and explores the implications of the 1995 Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement, the 2001 Doha Declaration, and the 2003 agreement preceding the Cancun meeting. These agreements do not resolve the important funding issues that developing countries confront as they seek access to drugs. Also, the international debate and its resolution will complicate the importing of foreign pharmaceuticals into the United States. The research-based pharmaceutical industry has argued that many of the relevant products are not on patent in the countries involved and that the problem is not patents but inadequacy of the medical infrastructure. The pharmaceutical industry views the patent system as essential to its business model. When a patent expires, the price normally falls as generic competitors enter the market. A number of developing countries, however, viewed patent law quite differently and deliberately decided to deny patent protection to pharmaceutical products and to grant protection only to processes for producing pharmaceuticals.

Keywords: Doha Declaration; TRIPS; Patent System; Generic Competitors

MANAGING RESEARCH AND DEVELOPMENT IN PHARMACEUTICAL INDUSTRIES**RAKESH JATAV*, SANDEEP SALODKAR**

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Abstract

The R&D managers strongly advocate R&D projects on a project-by-project basis. This literature suggests that projects should be managed differently depending upon project characteristics such as risk, ambiguity, and non-routineness. While the primary emphasis of the R&D professional literature has been on project teams, this study investigates the influence of organizational controls on the research and development activities in pharmaceutical industries. This study is one of a handful of studies that simultaneously explores the use of input, behavior, and output controls. Two categories of innovation are considered as dependent variables: incremental innovations in the form of drug enhancements and radical innovations in the form of new drugs. Contrary to existing theory and hypotheses developed in this study, the results show that input, behavior, and output control enhanced radical innovation, and input and output controls enhanced incremental innovation. These results challenge several important features of existing models of R&D management and diverge from common beliefs about R&D management at the project level. While it is commonly accepted that incremental and radical innovation should be managed differently.

Keywords: Research and Development Organizational Control; Incremental Innovation; Radical Innovation

INNOVATION AND PROFITABILITY IN PHARMACEUTICAL INDUSTRIES

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Abstract

This paper develops and test frame work for firm level profit persistence that embraces product innovation, product market competition. Sustained high profitability may result when a firm repeatedly introduces valuable innovation. Each innovation may erode over time; innovation ensures that overall the firm maintains a high performance position. At the same time sustained high profitability may also occurs to the firm that innovate less often but effectively avoids competition that otherwise erode high returns. The analysis sustained with the pharmaceutical industry find support for the expected relationship between high innovative propensity and sustained superior profitability, but no support for a link between ability to avoid competition and persistence.

Keywords: Innovation; Superior profitability; Innovative Propensity

PROCESS VALIDATION OF NEBIVOLOL HYDROCHLORIDE TABLETS**GIRIRAJ PATIDAR^{1*}, REVATHI A GUPTA¹, ARUN K GUPTA²**

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Abstract

The main aim of the present research work was to study process validation of Nebivolol hydrochloride tablets 5 mg to provide documented evidence that the manufacturing process of "Nebivolol Hydrochloride Tablets 5 mg" meets the predefined control limits. This involves in-process observation of critical process and finished product analysis of present production can document confirmation to demonstrate that the manufacturing process is in a shape of control. The validation was conducted to provide the documented evidence and to provide the assurance that the Nebivolol Hydrochloride Tablets 5 mg can be manufactured at the commercial scale, meeting the all the quality attributes in the consistent manner. To demonstrate that the all the Critical Process Parameters (CPP's) and Critical Quality Attributes (CQA's) are found complying predetermined criteria and shall produce the uniform drug product which is reproducible and consistent. Three consecutive commercial batches of was considered for process validation studies. The successful completion of the process validation study were provides the high degree of assurance that the process is capable of consistently producing the product to meet the predetermined specification for strength, identity, safety, purity and quality characteristics. Quality into the product task has built by the process validation method. Process Validation had proven to be an important tool for quality management of pharmaceuticals.

Keywords: Nebivolol hydrochloride; Process Validation; Critical Quality Attributes

COMFA, COMSIA, HQSAR AND DOCKING ANALYSIS OF CHALCONES**T. NARSINGHANI*, R. SHARMA, A. PANDIT****School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshshila Campus, Indore-452001****Email: kashishnarsinghani@rediffmail.com**

Abstract

Free radicals have been implicated in the etiology of several human diseases as well as ageing. These free radicals can be neutralized by a class of compound known as "Antioxidants". Antioxidants may prevent and/or improve different diseased states. Chalcones constitute an important group of natural compounds that are shown to have varied pharmacological activities. Chalcones are known to inhibit tyrosinase enzyme. Presented herein is a comprehensive study on the structural requirements of chalcone derivatives for improved antioxidant activity. A dataset consisting of sixty-nine chalcone derivatives and their biological activity were subjected to CoMFA, CoMSIA and HQSAR analysis utilizing Sybyl X 2.0. The generated CoMFA, CoMSIA, HQSAR models displayed good statistical significance in terms of cross validation (q^2) of 0.684, 0.689 and 0.947 and non-cross validation (r^2) of 0.978, 0.977 and 0.947. The high and significant predicted r^2 values of 0.684, 0.689 and 0.72 being obtained for CoMFA, CoMSIA and HQSAR analysis, giving an indication about the predictive ability of the developed models. Structure-activity relationship developed on applying these computational approaches revealed that electron releasing groups are favoured at ring A, while electron withdrawing group is favoured at position 2 of ring B and position 4 and 5 indicate the requirement of electron releasing group. Steric bulk is not tolerated at position 2' and 3' on this ring, while steric bulk can be very well tolerated at position 2,4 and 5 of ring B. HQSAR contour map analysis depicted positive contribution of position 3,4 and 5 of ring B and medium contribution of position 2 of ring A. Docking analysis revealed hydrogen bond interaction between 2'-OH of ring A and oxygen of Met280. These results helped us in understanding the structural requirements for designing novel antioxidant molecules.

Keywords: Chalcones; CoMFA; CoMSIA; HQSAR

FORMULATION, DEVELOPMENT AND EVALUATION OF NANOMIEMGEL FOR THE TREATMENT OF SKIN DISEASE: A REVIEW

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Abstract

In developing countries occur many types of health issue or various types of disease due to environment, incompatible diet and faulty foods. Among of disease one of the Skin disease are numerous and a frequently occurring health problem affecting all ages from neonates to elderly and cause harm in number of ways. There are number of skin diseases occur such as rashes, viral bacterial, fungal infections, cancer etc. In present methodology is to formulate, develop and evaluate of nanomiemgel for the treatment of skin disease. Nanomiemgel (NMG) is consist of two matrices A & B where matrix A is nanoemulsion (NEM) while matrix B is nanomicelle (NMI) Novel Drug Delivery System is better than conventional drug delivery system. Nanomiemgel is to develop a combination therapy as well as topical drug delivery system. The absorption of the combined system would be better than either of the individual drug delivery systems due to maximum possible paths of absorption available for that particular drug. Purpose of this study minimising toxic effect, reducing dosing frequency, better therapeutic effect, increase bioavailability, etc. Nano particulate systems to expect would be better skin permeation

Keywords: Nanomiemgel; Nanoemulsion; Nanomicelle; Combination therapy

TOPICAL RETENOID: TAZAROTENE - AN OVERVIEW**ANISH P. THOMAS*, RAGHVENDRA DUBEY, SMRITI MALVIYA****Department of Pharmaceutics, Dr. APJ Abdul Kalam University Indore****Email: anishthomas0@gmail.com**

Abstract

Retinoids have been widely used for treatment of acne, psoriasis, skin aging, and certain types of cancers since their first introduction in the year 1971. Retinoids are chemically derived from vitamin A and regulate numerous transcription factors including RAR and RXR located within the nucleus of various cells, alter the growth of the top layer of skin. Retinoids allow signaling to close proximity cells by binding the nuclear receptors, therefore regulating epithelial cell growth and rate of proliferation. The different topical retinoids available today are: retinol, tretinoin, adapalene, tazarotene, alitretinoin, and bexarotene. These come in cream, gel, and liquid forms. Tazarotene gel can be applied to plaque psoriasis and has minimal systemic absorption. Unlike other retinoids, tazarotene is selective for retinoic acid receptor (RAR) proteins, with no affinity for retinoid X receptors. This may reduce unwanted effects, which are mainly local irritation of healthy skin with pruritus. Tazarotene should be avoided for 1 month before conception, because of potential teratogenic effects. Tazarotene drug used on the skin to treat several skin conditions. It is also being studied in the treatment of basal cell skin cancer and basal cell nevus syndrome. Tazarotene is interconnected to vitamin A and is made in the laboratory. It turns on a gene that may help stop the growth of skin cancer cells. Tazarotene is a type of synthetic retinoid. A synthetic, topical retinoid Tazarotene induces the expression of tazarotene-induced gene 3 (TIG3), a tumor suppressor gene. In psoriasis, tazarotene normalizes abnormal keratinocyte differentiation and reduces their hyperproliferation. Tazarotene was the first topical retinoid approved for the treatment of plaque psoriasis in the United States; it was approved in 1997. It is available as a gel or cream in a concentration of either 0.1% or 0.05%.

Keywords: Retinoic Acid Receptor (RAR); Vitamin D Receptor (VDR); Hormone Response Elements; Target Sequences; Retinoid X Receptor (RXR)

**PHARMACOLOGICAL INVESTIGATION OF HAIR GROWTH PROMOTIONAL POTENTIAL OF
PHYLLANTHUS NIRURI LINN. EXTRACT AGAINST DOXORUBICIN INDUCED ALOPECIA IN
EXPERIMENTAL RATS****RUCHI GUPTA*, NEELESH MALVIYA**

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Abstract

The present study was aimed to assess the hair growth promotion activity of *Phyllanthus niruri* in doxorubicin induced alopecia in experimental rats. The experimental protocol was designed for 20 days as per reported model of doxorubicin induced alopecia. At day 0 all hair follicles were in resting stage (telogen). Hair growth was induced by depilating the hairs with a hair remover cream. At 9th day after depilation; all follicles were in anagen VI stage. As soon as induced anagen follicles, i.e. on 9 post depilation, had reached early anagen VI, At the 9th day freshly prepared doxorubicin solution 2mg/kg was administered through intra-peritoneal route from 9th to 15th day in groups I, II and III. Hence, hair follicle dystrophy was induced after doxorubicin administration. Animals of groups- II, III were orally administered with 250mg/kg body weight of extract solution of petroleum ether of *Phyllanthus niruri* from 10th day upto 19th day. At 20th day of experiment all the groups were sacrificed and the histopathology of skin was conducted. Histopathology and gross morphologic observations for hair regrowth at shaved sites revealed active follicular proliferation. It was observed that the petroleum ether extract of *Phyllanthus niruri* Linn showed the ability to prevent damage to hair follicles by doxorubicin. Animal of groups II, III treated with extracts of plant showed hair regrowth. The study was concluded that extracts of *Phyllanthus niruri* Linn shown to be capable of promoting follicular proliferation or preventing hair loss in doxorubicin induced hair fall.

Keywords: Doxorubicin; *Phyllanthus niruri*; Hair loss; Chemotherapy; Alopecia

VALIDATED HPTLC METHOD FOR THE DETERMINATION OF GLIPIZIDE IN COMBINED DOSAGE FORMS.**GAJANAND ENGLA*, L.K. SONI****School of Pharmacy, DAVV, Indore****Email: gajanand54@gmail.com****Abstract**

The developed and validated HPTLC method is simple, accurate, cost effective, and the statistical analysis proved that the method is reproducible and efficient for the analysis of Glipizide, in combined dosage form. The instrument Camag Linomat V semi automatic sample applicator, Camag TLC scanner 3, CATS V.4.06 software was used for the estimation, of the data. The pre coated silica gel G 60 F 254 was used as stationary phase. The mobile phase used was ethyl acetate: dichloromethane: formic acid (1:2:1 v/v/v), chamber saturation time 20 min, migration distance 70 mm, wavelength scanning was done at 275.5 nm. The band width of 8 mm, slit dimension 5 ± 0.45 mm, scanning speed 20 nm/sec, and the source of radiation was a deuterium lamp. A good linear relationship was obtained over a concentration range of 200-800 ng/spot for Glipizide. The amount of Glipizide present in the three marketed formulations MI, MII and MIII was found to be 101.3 ± 0.975 , 99.8 ± 0.625 and 99.65 ± 0.755 respectively. The LOD for Glipizide was found to be 200 ng and the LOQ was found to be $0.339 \mu\text{g/ml}$. The linear regression data at a concentration range of 200-800 ng/spot for Glipizide showed a good linear relationship. The RSD was found to be less than 2 for both inter-day and intra-day assay precision. The efficiency of the method is determined by means of number of theoretical plates. The number of theoretical plates was 3760 for Glipizide.

Keywords: HPTLC; Glipizide; LOD; LOQ; %RSD; R_f value

MICROENCAPSULATION: A PROMISING TECHNIQUE FOR CONTROLLED DRUG DELIVERY OF THE DRUG

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Abstract

Microencapsulation is the process of surrounding or enveloping one substance within another substance, yielding capsules ranging from less than one micron to several hundred microns in size. The controlled release drug delivery system, release the active drug or medicament at a predetermined rate targeting the drug to specific site over a prolong period of time. The basic reason for the development & success of surrounding or enveloping technology depends on the better and accurate choice of the wall material. The core material may be encapsulated so that the core material will be released through the capsule walls, known as controlled released, or when external condition trigger the capsule walls to rupture, melt, dissolve. To develop and to enhance the growth for oral controlled release system, Microencapsulation technology is more desirable method for getting better results. The objective of this paper is to take a closer look at micro particles as drug delivery device to improving the release profile and the drug targeting, mechanism of drug release, type of coating material, techniques for the preparation of microcapsules and its applications.

Keywords: Microencapsulation; Controlled drug release system

SYNTHESIS AND ANTIMICROBIAL SCREENING OF SOME N-(5-OXO-2-ALKYL/ARYL-IMIDAZOLIDINE-1-YL) ISONICOTINAMIDE DERIVATIVES**RAKESH PATEL^{1*}, ANIL BHANDARI²**¹School of Pharmacy, Dr. A P J Abdul Kalam University, Indore M P. ²Dept. of Pharmacy, JNV University Jodhpur (Raj) India
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New derivatives of isoniazid; N-(5-oxo-2-alkyl/aryl-imidazolidine-1-yl) isonicotinamide have been synthesized and they are evaluated for their Antifungal, Anti-tubercular and Anti-bacterial activity. Compounds were synthesized by substituting isoniazid (Schiff Base) by the reaction of isoniazid with substituted aldehydes and substituted isoniazid (Schiff Base) then react with amino acetic acid in the presence of 1:4 dioxane to give various isonicotinamide derivatives. Synthesized compounds showed significant activity against bacterial, fungal and mycobacterium strains. Their structures were established on the basis of elemental analysis, IR, ¹H NMR and Mass Spectral data.

Keywords: Imidazolidine; Isoniazid; Anti-mycobacterial

SYNTHESIS OF HIGHLY SUBSTITUTED INDENE'S FROM ARYL VINYL ALCOHOL**SHIVENDRA S. RAGHUWANSHI*, ANKUR JOSHI, SAPNA MALVIYA, ANIL KHARIA****Modern Institute of Pharmaceutical Sciences, Indore****Email: meedaya@gmail.com**

Abstract

The aim of present work was to synthesis and characterization of highly substituted Indene's from Aryl Vinyl Alcohol. Cyclopentane motif is a privileged structure because of its widespread occurrence in many synthetic organic molecules and biologically active natural products such as prostaglandins, steroid, and terpenoid, etc. The classical approach towards the construction of cyclopentenone rings is the Nazarov Cyclization, a cationic electrocyclization that converts divinyl ketones to cyclopentenones by activation with protic or Lewis acids. Electrocyclic reactions are a powerful synthetic transformation with the ability to create new carbon-carbon bonds stereospecifically by the simple orbital reorganization. Synthesis of tertiary hydroxyl containing aryl, vinyl, and methyl and their application in the synthesis of highly substituted indenenes were described. We envisioned that highly substituted indenenes could be synthesized from aryl vinyl alcohols. Aryl vinyl alcohols can be obtained from aryl vinyl ketone by adding organolithium reagent as shown in the retrosynthetic analysis. We have accomplished several highly substituted indenenes, and all new synthetic compounds were well characterized by using ^1H NMR, ^{13}C NMR, ESI-LCMS, and IR. For the biological investigation, all compounds were submitted to National mole bank of CSIR-IICT with high purity and results of biological activity yet to obtain. Indene, a polycyclic compound consisting of benzene ring joined with cyclopentene ring represent an important and structural unit in various biologically active compounds. The importance of this class of molecules gets further impetus due to their involvement as starting material in the synthesis of various biologically active scaffolds. Indenes exhibit a broad spectrum of biological activity. They also serve as precursors for synthetically and biological important indenones and many other potential scaffolds such as steroids or gibberellins.

Keywords: Cyclopentane; Nazarov Cyclization; Indene

SGLT-2 RECEPTOR: A POTENTIALLY NOVEL TARGET FOR TREATMENT OF TYPE 2 DIABETES MELLITUS

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Abstract

In the 21st century Type 2 diabetes mellitus is establishing itself as an epidemic and most of the currently available antidiabetic drugs are associated with a higher risk of ischemic cardiovascular events, including myocardial infarction and stroke, and microvascular events, including nephropathy and retinopathy. Thus it is very important to find better and safer oral drugs for treatment of Type 2 Diabetes mellitus. From recent study it has been found that Sodium Glucose Cotransporter 2 inhibitors have lower cardiovascular risk and shows its action apart from glucose lowering alone. SGLT-2 inhibitors show an insulin dependant mechanism to reduce the hyperglycemia and helps in treatment of hyperglycemia with lower risk of hypoglycemia. A review on pharmacophore study of SGLT-2 inhibitors has shown that diarylmethane C-glucoside is one of the excellent SGLT-2 inhibitor. The study of active micro-molecules of Sodium Glucose Cotransporter 2 provides guidance for designing of novel SGLT-2 Inhibitors. The optimal pharmacophore model contained seven pharmacophore features. The study shown that one hydrogen-bond donor, one hydrogen-bond acceptor and five hydrophobic groups are essential for inhibiting SGLT-2 receptor. SGLT2 inhibitors have offered a new fundamentally different approach for treatment of Type 2 diabetes mellitus with lower cardiovascular and hypoglycemic risk. The clinical results suggest this class of inhibitors could be safely used for non-renal impaired patients at any stage of T2DM either alone or in combination with other marketed antidiabetic medications.

Keywords: Imidazoquinoline; Pharmacophore; Antidiabetics; DPP-IV inhibitors

OPTIMIZATION AND VALIDATION OF RP-HPLC METHOD FOR THE ESTIMATION OF CHLORZOXAZONE AND PARACETAMOL WITH ITS GENOTOXIC IMPURITY (4-AMINO PHENOL) IN BUL AND PHARMACEUTICAL DRUG PRODUCT USING PDA DETECTOR

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Abstract

Paracetamol and chlorzoxazone are frequently associated in pharmaceutical oral formulations. These active compounds have different polarity and, therefore chromatographic method development is cumbersome and is further complicated by the presence of impurities such as 4-aminophenol related to paracetamol. The dosage forms also contain excipients, some of which may interfere with the analysis of the active ingredients. No single method is reported to determine the active ingredients quantitatively in this combination with a check on p-amino phenol (genotoxic impurity) in formulation. A simple, accurate, precise, reproducible RP-HPLC method has been developed for simultaneous estimation of chlorzoxazone (CZX) and paracetamol (PCM) with its genotoxic impurity, p-amino phenol (4-AP) in bulk and combined dosage form (tablet). The method was validated in compliance with ICH guidelines. The LC separation was achieved on LiChrospher RP-18e (250X4.6mm), 5 μ m column at 279 nm in isocratic mode using mobile phase composition methanol: acetate buffer (60:40 v/v), pH adjusted to 5.5 by acetic acid. Flow rate employed was 1.0 ml/min. The retention time for paracetamol, chlorzoxazone and 4-amino phenol were found to be, 3.76, 6.20 and 2.75 minutes respectively. Linearity ranges for paracetamol, chlorzoxazone and 4-amino phenol were established in the range of 10-50 μ g/ml, 10-50 μ g/ml and 0.8-2.8 μ g/ml respectively with correlation coefficient of 0.997, 0.996 and 0.999 respectively. The % recoveries for paracetamol, chlorzoxazone and 4-amino phenol impurity were found in range with relative standard deviation (RSD) less than 1. The LOD and LOQ were found to be 1.1483 and 3.4798 for paracetamol, 1.3890 and 4.2092 for chlorzoxazone and 0.01459 and 0.0442 for p-amino phenol respectively in μ g/ml. The proposed method is successfully applied for the quantification of paracetamol, chlorzoxazone and 4-amino phenol impurity in bulk and formulations.

Keywords: Chlorzoxazone; Paracetamol; 4-Amino phenol impurity; Photodiode array detector

DESIGN & CHARACTERIZATION OF METFORMIN HYDROCHLORIDE MICROSPHERES USING SOLVENT EVAPORATION TECHNIQUE

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Abstract

The design & Characterization of Metformin Hydrochloride Microspheres using Solvent Evaporation Technique was performed. Metformin HCl microspheres were prepared by solvent evaporation technique using various polymers including ethyl cellulose, Hydroxypropyl methylcellulose, and chitosan to improve the bioavailability, reducing the dosing frequency and to improve the patient compliance of drug in comparison with other conventional dosage forms. The effect of process variables like drug entrapment efficiency, stirring rate, drug content, yield and drug release profile were studied. It was observed that an increment in stirring speed decreases the size of microspheres and increases the release of drug from microspheres. It was concluded that the various degree of sustained release of metformin was obtained for microspheres prepared with ethyl cellulose, HPMC, and chitosan from which the microspheres prepared with chitosan has the most drug sustaining property then other formulations. Therefore, the developed microspheres prepared by solvent evaporation technique shows the sustained oral drug delivery of metformin HCl.

Keywords: Metformin HCl; Microspheres; Sustained release; Solvent evaporation technique

SYNTHESIS AND CYTOTOXICITY ASSAY OF CHRYSIN DERIVATIVES AS ANTICANCER ACTIVITY**SURESH CHAND DANGI*, SUDHA VENGURLEKAR**

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Abstract

Chrysin derivatives have been extensively studied to explore their potential utilization in chemoprevention. The main objective of the present work is to perform a Synthesis and Cytotoxicity Assay of chrysin derivatives. Chrysin derivatives were synthesized and cytotoxicity study by MMT Assay. Cancer is a group of diseases that characterized by uncontrolled growth and multiplication of abnormal cells. Several techniques have been adopted for the treatment and eradication of cancerous cells. These techniques involved surgery, radiation, immunotherapy, chemotherapy and chemoprevention. Without harming normal tissues ideal anticancer drugs would eradicate cancer cells. Chrysin, also known as 5, 7-dihydroxyflavone with an IUPAC name of 5,7-dihydroxy 2-phenyl-4H-chromen-4-one, belongs to the flavone sub-class of flavonoids. Its chemical structure is essentially based on a three ring nucleus with a phenyl ring attached to position 2 of the fused bicyclic and rings. Flavonoids including flavones, flavonols, and flavones possess various biological activities as Antioxidant, anticancer etc. chrysin as a flavonoids shown activity for anticancer activity. Acylation of chrysin was done with the aim to protect hydroxyl groups to have more bioavailability of chrysin derivatives and cyclic moieties were included in order to have more lipophilic character and synergistic effect towards anticancer activity. Overall compound have shown better potential as anticancer agent, however, further investigation of the in vivo activity and toxicity studies is necessary to elucidate the mechanisms of action and the efficacy of compound further.

Keywords: Chrysin; Cytotoxicity Assay; Flavonoids; Antioxidant; Anticancer

ROLE OF PATENT AND EXPIRATION IN PHARMACEUTICALS

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Abstract

Pharmaceutical is highly lucrative market in the terms of intellectual property rights. The patent is an exclusive right granted to the inventor by the specific government of the country for the utilization of invention for commercial use. Patent is the protection of the invention intellectually generated by inventor. The patent helps prevent the replication of manufacturing and sell of the pharmaceuticals without the legal permission of the inventor till the patent expires which is normally up to 20 years. While getting the patent for any pharmaceutical will provide the full rights to inventor to use the medicine and gain the monetary benefits. In current scenario every year new lives saving drugs are being introduced and patent has given consistent growth to the industry for the manufacturing and sale of the new products. The inventor has individual right for his invention and the price of the invention includes money spent on research and development of invention. The patent can be applied by individual and jointly by two or more than two inventors to whom the inventor has assigned the invention.

Keywords: Patent; Intellectual Property Rights; Inventors; Pharmaceutical

MICROWAVE ASSISTED AQUEOUS EXTRACTION OF STEM BARKS OF ZIZIPHUS SPECIESRAGHVENDRA DUBEY^{1*}, KUSHAGRA DUBEY²¹College of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore (M.P.).²Smriti College of Pharmaceutical Education, Indore (M.P.)
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Abstract

Dried Stem barks are hard and their cellular structure is less impermeable for solvent extraction. Maceration for longer period may results in extraction of chemical constituents from such samples which is time consuming process. In the present work an attempt was made to increase the penetration of the solvent via irradiating with microwave radiation to increase the extraction and to reduce the overall time of extraction. The Dries barks of *Ziziphus mauritiana* and *Ziziphus nummalaria* were subjected to aqueous extraction under microwave assisted extraction in borosil glassware. The microwave was set to minimum 20% heating for the period of 60 sec and 2mins. The procedure was repeated and the product obtained was dried. The product was compared with the convention extraction of the stem barks of species. The results clearly indicate that the extractive value of *Ziziphus* stem barks were increase 2.3 fold greater than conventional method. The overall time of extraction is reduced to 4%. The comparative phytochemical screening of extracts from conventional & microwave assisted extraction confirms the presence of same constituents however the amount of extract is found more in microwave assisted extraction. The microwave aqueous extraction is safe and effective method for the extraction from stem barks.

Keywords: *Ziziphus mauritiana*; Maceration; *Ziziphus nummalaria*; Phytochemical Screening

TAZAROTENE: A TOPICAL RETENOIDS AGAINST COMEDONES FOR THE MANAGEMENT OF ACNE

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Abstract

Acne is one of the common diseases observed in youngsters and sometime non curable for the longer period of time. For the management of acne topical retinoids acting on comedones and microcomedones are used. The retinoids are generally derived from vitamin A, tretinoin and isotretinoin. They regulate transcription factor, intercellular communication, epithelial cell growth and rate of proliferation. Tazarotene, synthetic retinoid, is potent medicine used for the treatment of acne which act on retinoic acid receptor (RAR) proteins and have no affinity for retinoid X receptors. Binding to retinoid X receptor generally results in unwanted side effects such as erythema, dryness, itching and stinging hence the tazarotene reduces sideeffects. Tazarotene is also used in the treatment of psoriasis, basal cell skin cancer, basal cell syndrome and other skin diseases. It is available in cream and gel formulation in a concentration of 0.1% or 0.05%.

Keywords: Tazarotene; Retinoids; Microcomedones; Retinoids

FORMULATION AND EVALUATION OF FLOATING MICROSPHERES OF BOSWELLIC ACID BY SOLVENT EVAPORATION METHOD**RAJU CHOUKSE*, DEEPIKABAIRAGEE, SWETA KULKARNI, ARUN K GUPTA**

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Abstract

The aim of the present research work was to formulate and evaluate floating microspheres using boswellic acid as drug. Boswellic acid is a lipophilic drug hence it is absorbed rapidly from the stomach and having the half life of 6 Hrs. The microspheres were prepared by the solvent evaporation method using polymers Eudragit RS 100 in fixed ratio and Ethylcellulose in variant ratios. Drug and polymer compatibility study was done by TLC and IR spectroscopy. The Percentage yield, Particle size distribution, Buoyancy percentage, Entrapment Efficiency and In vitro drug release studies were performed and drug release kinetics was evaluated using the linear regression method. The prepared microspheres exhibited prolonged drug release for about 18h and remained buoyant for more than 12 h. As the mean particle size increases, the drug release rate decreases at higher polymer concentration. The floating microspheres followed zero order kinetics and the mechanism of drug release was governed by Peppas model.

Keywords: Microspheres; Boswellic Acid; Buoyancy; *In-Vitro* Studies; Diffusion- Controlled Drug Release

ENDOTHELIN-A RECEPTOR ANTAGONIST AS ANTIHYPERTENSIVE AGENT**ANAND PANCHAL*, PAWAN CHOUDHARY, STEFFY MARY CHANDY, REVATI A. GUPTA****Institute of Pharmacy, Dr. APJ Abdul Kalam University, Indore****Email: anandpanchal69@gmail.com**

Abstract

The local vasoconstrictor substances are of endothelial origin and are known as endothelins (ET). The production of endothelins is because of the stretching of blood vessels. Endothelin-A exerts pro-inflammatory, profibrotic and hypertensive properties on heart, blood vessels and kidney. Hence Endothelin-A receptor antagonist have a potential to reduce blood pressure and different complications occurred due to hypertensive diseases. Endothelin-A receptor antagonist may contribute to its therapeutic potential in hypertension and other disorders like diabetes and renal failure. They have different other disorders too like fibrosis, atherosclerosis, inflammation, cardiovascular growth and diabetes. The aim of this study is to compare the effect of BMS-182874 on selective Endothelin-A receptor antagonist in hypertension. BMS-182874 had no effects on changes in mean arterial pressure brought about by vasoactive agents. But they specifically effect on inhibiting the pressor response to Endothelin-A in Sprague-Dawley rats in a dose dependent manner. The effect of the BMS-182874 is on deoxycorticosterone acetate(DOCA) which is a type of steroidal hormone formed in adrenal gland in a salt hypertensive rats, spontaneously hypertensive rats (SHR), and sodium-deplete SHR. BMS-182874 generally reduces blood pressure in salt hypertensive rats when given at a dose of 30, 45, 75,100,300 μ mol/kg IV. Maximum upto reduce of 45mm of Hg is observed after the time interval of 3 days in a hypertensive rats when given dose of 100 μ mol/kg IV via intravenously. Thus, Endothelin-receptor activation may play a role in volume-dependent or low-renin hypertension but is unlikely to be important in all hypertensive states.

Keywords: Endothelins; Hypertension; Deoxycorticosterone acetate

SPACE MEDICINE – A REVIEW

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Abstract

Space Medicine has evolve to support the presence of human being in space, which is an environment not designed for human being. Evidence based Medicines, lessons from research and clinical experience were the principal drivers behind the never ending effort to secure astronauts lives and understand how the space environment influences human physiology.

To understand and solve the problems of astronauts encountered in space i.e. physiological and psychological problem, such as Motion sickness, negative nitrogen, calcium balance, anemia, Radiation exposure are the issues that are already affect medical practice.

Keywords: Space medicine; Motion sickness; Calcium balance

DESIGN, SYNTHESIS AND INVESTIGATION OF NITRO ARYL/ NITRO HETEROARYL ANALOGS AGAINST LEISHMANIASIS

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Abstract

Historically, the pharmaceutical industry has relied upon discovering drug leads by screening and sifting through vast inventories of naturally occurring and man-made chemicals in search of previously undiscovered substances with the desired biological activity. Conventionally, optimization of the lead is achieved by random exploration of the chemical structure through the synthesis of large numbers of chemical derivatives. Considering both the potential benefits to human health and the enormous cost in terms of time and money for drug discovery, any tool or technique [High throughput Screening (HTS), Combinatorial chemistry and Molecular Modeling], that increased the efficiency of drug discovery enterprise will be highly prized. Nobody could design a drug before knowing more about the disease or infectious process. For “rational” design the first necessary step is the identification of a molecular target critical to a disease process or an infectious pathogen. Then the important prerequisite of “drug design” is the determination of the molecular structure of target, which makes sense of the word “rational Therapy to treat patients with leishmaniasis still poses a series problem. The drugs of first choice are pentavalent antimonies compounds, which were developed before 1960, and in general, require long-term treatment and have severe side effects. Second-line drugs, such as Amphotericin B and its lipid formulations, are either too toxic or expensive for routine use in developing countries. At the same time, the efficacy of Miltefosine against cutaneous leishmaniasis remains to be ascertained. The reported large-scale clinical resistance to antimonial agents in India and Sudan has created an urgent need for the development of safer, cheaper, and more effective new anti-leishmanial drugs. The study will generate novel & potent ant-Leishmania agents, which will be cost effective, & of lesser side effects. The employment of rational drug design will ensure that the generated drug candidates will be selective towards the cells and will seldom act on normal cells. The study will also generate lead molecules, which might be prospective drug candidate for the treatment of Leishmaniasis.

Keywords: Leishmaniasis; Nitro aryl/ Nitro heteroaryl Analogs; High throughput Screening

MICROBIAL LIMIT TEST OF DIFFERENT PATHOGENS FOR WATER SAMPLE**POONAM JAISWAL*, SMIRITI SOHANI****Department of microbiology, I.K.D.C.College, Indore****Email: jaiswalpoonam274@gmail.com**

Abstract

Bacteriological water analysis is a method of analyzing water to estimate the number of bacteria present and, if needed to find out what sort of bacteria they are it represent are aspect of water quality. It is a microbiological analytical procedure which uses samples of water and from these samples determines the concentration of bacteria. It is then possible to draw inference about suitability of the water for this concentration. The pure water free from of pathogen organism is called potable water. It is used for drinking water is obtained from rivers, streams, lake, wells, borewell e.t.c. normally, the coliform bacteria are considered as the indicators of pollution of drinking water. These live in the human colon of these *Escheria coli* is important and it is released through feaces. The presence of *E.coli*, on the water indicates pollution. Potability of water is determined by bacteriological test.

Keywords: *Escheria coli*; Pathogen organism; Coliform bacteria

JAGRUTI: AN EDUCATIONAL INTERVENTION TO SAFEGUARD REPRODUCTIVE HEALTH OF ADOLESCENT GIRLS

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Abstract:

Objective of study was to assess the knowledge level of adolescent girls about menstruation, status of hygienic menstrual practices and socio-culture restriction followed during menstruation. Study is aimed to develop Jagruti-awareness programme and assess its impact on knowledge level about menstruation, promotion of safe and hygienic menstrual practices, and overcoming of restrictions and taboos. **Community based, cross-sectional interventional study was conducted in selected population of adolescent girls from North Maharashtra. Self-prepared and validated** questionnaire consisting of components like demographic information, knowledge about menstruation, socio-cultural restrictions and hygienic practices during menstruation were administered to the participants of study. Following collection of pre-test data, Jagruti was conducted for adolescent girls. Programme consisted of steps like dissemination of information through interactive lecture by female facilitator, screening of animated video, individual counseling, question answer session and display of awareness posters. Post-test data was collected through questionnaire to evaluate the impact of Jagruti awareness programme on the knowledge, attitude and practices of respondents about menstruation. Statistical analysis was done through Fisher's exact Chi-square test. **It was observed that prior to implementation of Jagruti (pre-test), adolescent girls had poor knowledge about menstruation, girls were following many socio-cultural restrictions and adopted incorrect hygienic practices. Only 57% of students were knowing about menstruation, 16.94% respondent were correctly identified that uterus is source of menstrual bleeding, 81.83% considered that menstruation is normal event and 46.29% knew that menstruation gives ability of reproduction.** Before, Jagruti programme, 60.10% respondents stated that they wash their external genitalia during bathing only, 54.96% adolescent girls used only water for cleaning the private part and only 50.0 % girls used sanitary pads during menstruation. Whereas, in the post-test period i.e. after the completion of Jagruti programme, notable enhancement was observed in the knowledge level and hygienic menstrual practices of adolescent girls. Significant ($P < 0.0001$) difference was noticed in the attitude of adolescent girls, before and after the conduction of Jagruti programme, towards socio-culture restrictions like communication with male members, cooking food, doing daily work, outdoor activities, etc. Jagruti programme has positive impact on adolescent girls regarding knowledge, attitude and practices about menstruation and menstrual hygiene. Jagruti is effective educational tool for spreading awareness about female reproductive health.

Keywords: Jagruti; Adolescent girls; Menstruation
