ABSTRACT BOOK

Two Days National Seminar on

"Current Pharmaceutical Technologies: Opportunities and Challenges

26th -27th July 2019

Organised by

Dept of Pharmaceutical Sciences

Saurastra University

Rajkot, Gujarat

Dr. Nitinkumar M. Pethani
Hon.Vice chancellor
Saurashtra University, Rajkot

Accredited Grade "A" by NAAC

Message

I am happy to know that the Department of Pharmaceutical Sciences, Saurashtra University, Rajkot is going to organize Science and Engineering Research Board (SERB), Department of Sciences and Technology (DST) and SSIP sponsored Two Days National Seminar on **Current Pharmaceutical Technologies: Opportunities and Challenges** during 26th -27th July 2019 and **Boot Camp for Idea Marathon** on 27th July 2019. I would like to congratulate the Department of Pharmaceutical Sciences for achieving excellence in pharmaceutical education and research in a very short period of time overlooking many odd hurdles.

This Two Days National Seminar on **Current Pharmaceutical Technologies: Opportunities and Challenges** and **Boot Camp for Idea Marathon** add long list of accolades received by the department. I praise the entire team of the Department of Pharmaceutical Sciences for organizing such historical event.

On behalf of Saurashtra University, I sincerely thank all speakers, guests and delegates for participating in this event. Your active participation will inspire us to contribute towards the progress of the field of pharmacy, especially Current Pharmaceutical Technologies which is the need of time.

I am sure that these types of events will be very useful for present and future generations. I wish a great success to this event.

Dr. Nitinkumar M. Pethani

Accredited Grade "A" by NAAC

Dr. Vijay Deshani
Hon. Pro.Vice chancellor
Saurashtra University, Rajkot

Message

It is pleasure to learn that Department of Pharmaceutical Sciences, Saurashtra University, Rajkot is going to organize Science and Engineering Research Board (SERB), Department of Sciences and Technology (DST) and SSIP sponsored Two Days National Seminar on **Current Pharmaceutical Technologies: Opportunities and Challenges** during 26th -27th July 2019 and **Boot Camp for Idea Marathon** on 27th July 2019.

The conference, indeed, would be great opportunity for young researchers to acquire ongoing research developments in Pharmaceutical Technologies and through Boot Camp for Idea Marathon researchers start thinking about becoming problem solvers and use their uninhibited innovative approaches to propose innovative solutions to these problems.

This conference is a platform for young researchers and academicians to interact with leading scientists to make progress in making India a leader in new drug development.

I convey my best wishes to all delegates and speakers and hoping for meaningful outcome.

Dr. Vijay Deshani

Dr. Ramesh G. Parmar
Registrar,
Saurashtra University, Rajkot

Accredited Grade "A" by NAAC

Message

I am immensely happy that Department of Pharmaceutical Sciences, Saurashtra University is going to organize a National Seminar on **Current Pharmaceutical Technologies: Opportunities and Challenges** and **Boot Camp for Idea Marathon** with partial support from Science and Engineering Research Board (SERB), Department of Sciences and Technology (DST), New Delhi and Student Startup and Innovation Policy, Saurashtra University.

I am sure that this event will provide good platform and opportunity to young students to ignite their minds by interaction with renowned scientist/speakers called by the organizers.

I also congratulate Head, Department of Pharmaceutical Sciences, all the staff members, students and Participants from our colleges and other colleges for their efforts in organizing and participating in this seminar.

Dr. Ramesh G. Parmar

Accredited Grade "A" by NAAC

Dr. Mihir Raval
Head,
Department of Pharmaceutical Sciences, Rajkot.

Message

On behalf of the organizing committee I take this opportunity with great pleasure to welcome all the renowned guests and delegates, in their respective fields to a two days national seminar sponsored by Science and Engineering Research Board (SERB), Department of Sciences and Technology (DST) and SSIP on **Current Pharmaceutical Technologies: Opportunities and Challenges** and **Boot Camp for Idea Marathon** at our Department of Pharmaceutical Sciences campus, Rajkot. We are privileged to extent a warm welcome to you all.

This unique national seminar will provide a platform for all pharmaceutical scientists to discuss and deliberate research and the latest developments in Drug Discovery, Development and Delivery and to explore with innovative solutions and provoking strategies in the area.

We hope that throughout the course of the two days seminar, you will get an exclusive opportunity to network and be involved in inspiring and interesting discussions with scientists, researchers, and experts of Pharmacy field. The seminar also aims to provide an occasion to the delegates not only to present their research and interact with eminent colleagues but also to enjoy the intellectually stimulating and fascinating environment of Department of Pharmaceutical Sciences.

Finally, We would like to express our appreciation for all the eminent speakers and delegates of this conference. It is due to your keen interest and contributions in the field. Once again we express great honour to welcome you all.

Dr. Mihir Raval

P1

Quinoline pharmacophore: Synthesis, antimalarial activity, SAR, and mode of action.

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Abstract:

Malaria remains one of the most deadly infectious diseases globally, which affects nearly 200 million people each year. The upword extend of malaria collectivity with the emergence of resistance against predictable drug has put enormous pressure on public health system to introduce new malarial treatments. Quinoline as pharmacophore, which are emerged as one of the most important class of antibiotics in the treatment of various bacterial infection, showed potential in vivo antimalarial activity and in vitro antiplasmodial activity and also “covalent bitherapy” suggests hybrid molecules to be the next generation antimalarial drug. Herein, we present the current progress and application of quinoline based derivatives as potential antimalarial scaffold, SAR and the development of new antimalarial agents.

P2

IDENTIFICATION AND METHOD DEVELOPMENT OF DILTIZEM HCl & IMPURITY GENERATED DURING THE PROCESS BY TLC-WITH UV ABSORPTION DENSITOMETRY.

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ABSTRACT:

Current studies deals with the method development and validation for detection and quantification of Diltiazem HCl and its process related impurity F by TLC-Densitometry. The trace impurity F was identified by simple TLC method against its standard. To achieve better separation, both API and impurity were separated on silica gel 60 F 254 TLC plates with chloroform: methanol: Formic acid (7.5:1.5:0.2 v/v) as mobile phase. The quantification zones were scanned at 254 nm. The quantification determination was developed and validated according to ICH guidelines. The statistical data of the analysis revise that the method is precise and highly sensitive. Results from linear regression analysis of the calibration plots were indicative of good linear relationship over wide ranges 1620-3780 ng and 180-420 ng for Diltiazem HCl and impurity F respectively. The LOD and LOQ of Diltiazem HCl were 76.81ng and 232.77ng and for impurity F were 58.42ng and 177.05ng respectively. This very first time reported for quantification of Diltiazem Hcl with its impurity F by HPTLC.

P3

NANOPARTICLE ALBUMIN – BOUND (NAB) TECHNOLOGY IS A PROMISING METHOD FOR ANTI-CANCER DRUG DELIVERY

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ABSTRACT:

Albumin is a versatile drug carrier in anti-cancer drug delivery system and it is very active to target tumors. In 2006, nab-paclitaxel has been approved for metastatic breast cancer who has failed in the combination chemotherapy and so this nab-technology has attracted towards anti-cancer drug delivery system. The detail of preparation, characterization, evaluation, pharmacokinetics, pharmacodynamics and the clinical trials of nab-paclitaxel are also included. The nab-technology has a great potential of being applied extensively in the field of anti-cancer agents delivery in the future in order to aquire the good safety and better therapeutical effect.

P4

PRODRUGS: A CHALLENGE FOR THE DRUG DEVELOPMENT

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ABSTRACT:

Prodrugs are bioreversible derivatives of drug molecules that undergo an enzymetic and chemical transformation in vivo to release the active parent drug. Prodrugs has desired pharmacological effect which can altered physicochemical, biopharmaceutical or pharmacokinetic properties of drug so the efficiency of drugs gets improved with specific target delivery. This article includes classification, effect of prodrugs on solubility, chemical stability, bioavailability, long duration of action and site targeted challenge with examples. The purpose of illustrating the role of prodrug is a better way for the more effecitve treatment of different diseases.

P5

MODERN APPROACH FOR NATURAL DRUG DISCOVERY AND DEVLOPMENT

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Abstract:

The pharmaceutical industry is facing serious challenge as the drug discovery process is becoming extremely expensive riskier and critically inefficient. We suggest that drug discovery and development need not always be confined to new molecular entities. Strategic option based on natural product drug discovery, ethenopharmacology and traditional medicines are re-emerging to offer good base as an attractive discovery engine. Approaches based on reverse pharmacology may offer efficiency development platforms for herbal formulation. Hence the global knowledge about Ayurveda and Indian herbals will hopefully be enhanced by information on the evidence based of the plant. Significant basically and clinical research has been carried out on the medicinal plants and their formulation. Relevant case studies from India and other countries where such approaches have expedited drug discovery and development process by reducing time and economizing investment with batter safety are discussed.

P6

RECENT INSIGHTS IN MAGNETIC HYPERTHERMIA

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ABSTRACT: -

Hyperthermia (HT, thermal therapy) is thought to be one of the cancer therapies and is considered to be an artificials way of increasing the body tissue temperature by delivering heat obtain from external sources to destroy cancerous cells or prevent their further growth. Now a days magnetic nano particles are widely used for a vast range for biomedical applications. The best ability of MNPs is they generate heat when exposed to alternating magnetic fields, usually exploited in magnetic HYPERTHERMIA THERAPY OF CANCER. However this thermal therapy required high amounts of MNPs in the tumor to be efficient on the contrary the hot spot local effects refers to the use of specific temperature profile at the vicinity of nanoparticles for heating with minor to no long-range effect. In this study describe a critical research of the use of MNPs and magnetic hyperthemia as the drug release gene expression triggers for cancer therapy. Several methods for the release of chemotherapeutic drugs from thermo-responsive matrices are discussed.

Novel *N*-Aryl-Indole based integrin-linked kinase inhibitors as potential anti–prostate cancer agents

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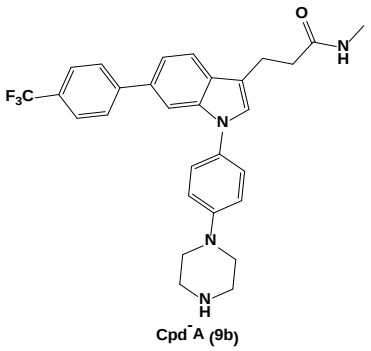
Abstract:

Integrin-linked kinase (ILK) represents a promising therapeutic target for the prostate cancer.[1-3] In this study, we have design and synthesized several new *N*-aryl indoleanalogs for their anti-prostate cancer evaluation. Among the newly prepared derivatives, Cpd-A(**9b**) exhibited potent antiproliferative activity (IC_{50}= 2.3 □M) against PC-3 cell growth in vitro. Moreover, western blot analysis revealed that **9b** inhibit ILK activity by consistent inhibition of the phosphorylation of AKT at Ser–473 and GSK3 □9□ at Ser-9 in PC-3 cells. Having promising antiproliferative profile, compound **9b** can be considered as potential lead candidates for further development



Cpd-A (9b)

Design of N-aryl-indole derivative by scaffold replacement

P8

FORMULATION AND IN-VIVO EVALUATION OF SILVER SULFADIAZINE LOADED NANOGEL FOR TREATMENT OF SEVERE BURN

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The present investigation concerns the development of Silver sulfadiazine (SSD) & honey loaded nanogel for severe Burns by top-down method. Effects of different concentration of stabilizer (Transcutol) & homogenization speed on particle size, PDI of drug were optimized using 3^2 factorial design. In which, concentration of stabilizer & homogenization speed had been chosen as Independent variables and particle size, PDI had been chosen as dependant variables. Nanogel was characterized by Differential scanning Calorimetry& evaluated for homogeneity, pH, rheological properties, *in vitro* diffusion study & microbial assay, i*n vivo* wound healing study using animal model. Optimized formulation from 3^2 factorial designs was used for *in vivo* burns healing study in rats. Optimized formulations were kept at 40°C & 75% relative humidity for stability study for 25 days which showed that the formulation remained unchanged. Particle size and PDI found to be in range between 297-1011 nm and 0.02072-0.941 by high speed homogenization technique. DSC & FTIR study showed that purity of drug and excipients. Zeta potential shows good stability of nanogel. % entrapment efficiency found to be 79.066-88.333.

Key words: Silver sulfadiazine, High speed homogenization, 3^2 factorial design

P9

FORMULATION AND DEVELOPMENT OF CURCUMIN LOADED MESOPOROUS MCM41 BASED NANOPARTICULATE DRUG DELIVERY SYSTEM FOR ORAL CANCER.

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ABSTRACT: The aim of present research work was to formulate and development of curcumin loaded mesoporous silica nanoparticles can actively target in tumor tissues for oral cancer. Nanoparticles were prepared using mesoporous MCM 41 as a polymer and curcumin as an anticancer agent by a solvent evaporation method. Surface functionalization of MCM41 was carried out for active targeting of the drug via folic acid as a targeting agent. Box Behnken design was applied for optimization of various processing parameters by using 15 runs. Drug and excipients interaction were carried out by DSC and FTIR. Particle size, PDI value, and zeta potential analysis were done by Zetatrac instrument. Entrapment efficiency, dissolution study, scanning electron microscopy, and x-ray diffraction were performed for characterization of the formulation. Confirmation of surface functionalization of mesoporous material was performed by DSC, FTIR, XRD, NMR, SEM. *In-vivo* bioavailability study was performed by using the rat model. The result of the present study demonstrates that curcumin loaded mesoporous silica nanoparticle with active targeting agent folic acid was suitable for active targeting of drug to tumor tissues. Mesoporous silica nanoparticulate drug delivery system is expected to have a big impact on clinical approaches for cancer therapy with the ability to specifically target tumor tissue along with controlled drug delivery. Hence, mesoporous silica nanoparticle formulation having an active targeting agent opens up the platform for oral cancer treatment.

Keywords: Curcumin, oral cancer, MCM 41, mesoporous silica nanoparticles, Box Behnken experimental design.

P10

DOCUMENTING GRANDMA'S PERCEPTIONS FOR SKIN DISEASES AND ETHNOBOTANICAL PLANTS

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ABSTRACT

The scientific study of the traditional knowledge and customs of people, concerning plants and their medical, religious, and other uses is known as Ethnobotany. Medicinal plants have been utilized as a part of all societies as a wellspring of medicine. The global utilization of home grown cures and healthcare preparations is depicted in the Vedas and the Bible. Medicinal plants have been used for a large number of years to flavour and preserve food, to treat wellbeing issue and to avoid illnesses including epidemics. The information of their healing properties has been transmitted within and among humans from hundreds of years.Some of these plants are used to cure skin diseases. Skin diseases are numerous and a frequently occurring health problem affecting all ages from small kids to the elderly and cause harm in number of ways. Keeping up sound skin is critical for a solid body. Many people may develop skin diseases that affect the skin, including cancer, herpes and cellulitis. Some wild plants and their parts are frequently used to treat these diseases. Natural treatment is cheap and claimed to be safe. It is also suitable to use them as a botanical base of raw materials for production of new synthetic agents. For these reasons several plants have been investigated for treatment of skin diseases ranging from itching to skin cancer. So far 15 plants have been reported to be effective in various skin diseases during the past 21 years (1998-2019)review of research work in Saurashtra region.

Key words: Ethnobotany, skin diseases.

P11

ENUMERATION OF SOME ETHNOMEDICINAL PLANTS USED AS PRIMARY MEDICINAL HEATH CARE FOR DIGESTIVE SYSTEM DISORDERS- IN SAURASHTRA REGION

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ABSTRACT: Nowadays, Due to modern lifestyle, unhealthy eating habits and many others factors. The digestive issues and diseases related to Digestive system has increased significantly over the past few years. Herbal remedies are considered as better alternatives for the treatment. Due to the occurrence of many side effects by use of synthetic drugs for many diseases, medicinal plants should be considered as the main source of new drugs as they have less or no side effects and is also an effective treatment against these infections and other disorders related to Digestive system. From children to adults, all the disorders can be effectively cured by use of more than 15 ethnomedicinal plants. Ayurveda is successful in treating many digestive disorders since ages. Digestive system disorders have a substantial effect on worldwide morbidity and mortality rates, among rural people where the majority of the rural areas have a lack of proper sanitation and awareness about disease prevention. This has led to the prevalence of different types of digestive diseases. Rural people in Saurashtra region use medicinal plants as first aid remedies in treating these diseases. Therefore, this study aimed at documenting the plants used to cure and prevent different types of digestive system disorders by rural people with the help of ethnobotanical study survey. But in these modern Era, by use of modern scientific techniques we can extract chemicals,phytochemicals, polyphenols and useful compounds from these ethnomedicinal plants, herbs etc. which helps in curing disorder or diseases, these could lead toward the development of some novel drugs with fewer side effects. Present paper deals with the study of medicinal plants and herbs used for treating digestive system disorders in Saurashtra region.

Keywords; Digestive system, Ethnomedicinal plants

P12

MEDICINAL PLANTS FOR THE TREATMENT OF SENSATIONAL DISORDERS IN THE PRADYUMAN PARK RAJKOT

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ABSTRACT

Ethnomedicinal Relevance. Mental and sensational disorders are a serious public health challenge globally, particularly in developing countries where cultural factors and limited access to standard healthcare have led to a reliance on traditional medicines. However, ethnomedicinal characterization of pharmaceutical medicines used to treat these diseases is lacking. Nowadays, sensational and mental disorders are a serious health problem, particularly in developing countries. Because of limited healthcare facilities, the use of traditional medicines has increased in developing countries. But in recent times, people has drawn much attention towards the use of traditional medicines globally for treating mental disorders. Though these medicines affect at a slower rate, they affect totally and helps to eradicate the disease from the body completely. Present paper deals with 15 plants which are used to treat neurological disorders. Those plants along with their botanical name, local name, chemical composition and uses are listed. An ethnobotanical description of plant species used in treating mental andsensational disorders in Pradyuman Park Rajkot.

Key words –Sensational disorders, Phytotherapy

P13

ENUMERATION OF ETHNOPHARMACOLOGY OF ANTI CANCER PLANTS AT PRADYUMAN PARK AT RAJKOT

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Abstract

Cancer is a serious health problem and the second leading cause of death around the globe. Present review is an attempt to provide utmost information based on ethno-pharmacological and toxicological aspects of anti-cancer plants of the world. One of the most common problems in the medical world is the resistance of cancer cells to anti-tumor drugs, so finding new anti-cancer agents with minimal side effect is essential. This study aims at identifying medicinal plants at pradhauman park rajkot which are traditionally used in the treatment of cancer by herbal practitioners. This study was conducted at pradhaumanpark ,rajkot the study was conducted from June2019 by frequently visit local people by using questionnaire and interview from herbal practitioners. The collected data were analyzed through relative frequency of citation index (RFC). In this study, 36 herbal practitioners were interviewed. A sum of 21 medicinal plants. The present study deals with enumeration of ethnopharmacology of anti-cancer plant at pradhauman park rajkot.

Keywords: cancer, ethnopharmacology

P14

AERODYNAMIC PARTICLE SIZE DISTRIBUTION OF BUDESONIDE AND FORMOTEROL FUMARATE PRESSURIZED METERED DOSE INHALATION AEROSOL FORMULATION BY CASCADE IMPACTION USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

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Abstract—

Aerodynamic particle size distribution (APSD) measurement for the pressurized metered dose inhalation (pMDI) formulation is Novel, Very interesting and Important technique. It is measured using cascade impaction. Anderson cascade impactor is mainly used to measure APSD. The working principle of this technique is inertial impaction. High performance Liquid Chromatography can be utilized to further analyze the sample of Budesonide and FormoterolFumarateDihydratepMDI Formulation.

The cascade impactors have three unique features of our interest which currently no other technique can replicate:

1. Cascade impactors measure aerodynamic particle size: Cascade impactors measure aerodynamic particle size which is a function of density and viscosity as well as the physical dimensions and shape of the particles concerned. This is important since it helps to explain how particles behave in a moving air stream (as exemplified by the respiratory tract) as opposed to simple “geometric” size.

2. Cascade impactors measure active pharmaceutical ingredient: Cascade impactors provide a direct means of recovering and quantifying the active pharmaceutical ingredient (API) contained in the aerosol cloud as opposed to the overall formulation. This is important since the aerosol clouds generated by pharmaceutical inhalers typically comprise a combination of API and other excipients or components, the latter having no effect on therapeutic efficacy.

3. Cascade impactors measure the entire dose: Cascade impactors, unlike other techniques which just provide a snap-shot of part of the dose, capture the entire dose allowing complete characterization of the formulation concerned.

P15

Fabrication and optimization of medicated knee brace.

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Aim: This project is aimed towards fabricating a medicated knee brace for improved treatment of joint pain.

Introduction: Joint pain is the major cause of disability among the people the age over fifty. There are several treatments available for joint pain like medicated, supportive treatment and surgical treatment, but they are not fully fledged for relieving joint pain. So, there is still a need of some novel treatment which can improve the current treatment. Combination of two treatments may prove beneficial over the individual treatment.

Materials and Methods: In present study we formulated and optimized diclofenac sodium topical patch. For formulating the patch initially trial formulations were conducted using different polymers from which combination of two polymers PVP-K30 and PVA was found better for delivery of drug. Based on this result the DOE (32 full factorial) was applied using two factor X1 (PVPK30) and X2 (PVA) against 3 responses R1 (Q2), R2 (Q4) and R3 (Q12) using Design® Expert software. Factorial batches were evaluated for thickness, folding endurance, drug content, moisture content, moisture uptake, in vitro drug permeation study. Derived mathematical models for responses were validated using two checkpoint batches. Final optimized batch was derived based on desirability function.

Results and Discussion: Results obtained by checkpoint batches were in line with the experimental results with 5% relative error revealing that the derived models were valid for the design. Optimized batch obtained by desirability function followed all the set criteria. Medicated patch prepared by optimize formulation was incorporated knee brace using pocket mechanism.

Conclusion: Combination treatment of supportive treatment with medicated treatment was found to be successfully combined into single treatment approach. Such treatment offers better patient compliance for patient as well as the healthcare provider, which can eb extended for other pain-relieving supportive treatments like elbow brace, waist brace, back support belt, cervical brace etc. It can be further optimizing for all pain relief non-surgical items in future.

P16

CANCER IS A PREVENTABLE DISEASE VIA CHEMOPREVENTIVE AGENTS: LITERATURE REVIEW

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ABSTRACT

In recent times about 1 million people suffering from a cancer post chemotherapy side effects. Since ancient time natural products herbs and spices have been used for preventing several diseases including cancer by using derivative phytochemicals or their analogs. The field utilizes experimental carcinogenesis models to examine the efficiency of chemopreventive agents in a stage-specific manner. A number of them have progressed to early clinical trials. Natural product like fruits, vegetables, tea & spices contains a potential molecule to prevent tumor & cancer cell. A brief literature review presented here shows that these natural molecules prove itself as a beneficial for society and human health & also will prove as great revolution in cancer researches.

Keywords: chemoprevention, phytochemicals, carcinogenesis, cancer vaccine

P17

FORMULATION, OPTIMIZATION AND EVALUATION OF CHRONOMODULATED DRUG DELIVERY SYSTEM OF LORNOXICAM AND THIOCOLCHIOSIDE BY USING NATURAL POLYMER

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ABSTRACT

The main objective of the present investigation was to formulate, optimize and evaluate chronotherapeutic drug delivery system of Lornoxicam and Thiocolchicoside using natural polymers for treatment of Rheumatoid arthritis. Rapid release core tablet were directly compressed using different amount of karaya and copal gum. Simultaneous equation was developed of Thiocolchicoside and Lornoxicam in 0.1 N HCl and Phosphate buffer 6.8. The lag time and time required for 90% drug release were considered as dependent variables and amount of Karaya gum and Amount of Copal gum were taken as independent variables. The check point formulation was selected form overlay plot using design expert 10.0 to validate the applied model. The press coated tablet was formulated by using 144.5 mg Karaya gum and 64.5 mg of Copal gum provide desried pulsatile delivery of Thiocolchicoside and Lornoxicam. The cumulative % drug release of Thiocolchicoside and Lornoxicam was 99.195 and 99.020% respectively. The drug release profile of press coated tablet showed a desired lag time depending upon amount of karaya and copal gum in compression coating followed by burst release. Hence this formulation composition provides promising approach for the chronomodulated drug delivery system of Thiocolchicoside and Lornoxicam.

Keywords: Chronomodulated, Lornoxicam, Press coated tablet, Rheumatoid arthritis, Thiocolchicoside.

P18

Optimization of Processing Variables Using PlackettBurman Design for Development of Cilnidipine Nanoparticles by Nanoprecipitation Method.

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Abstract

In the present study the Nanoparticles of Cilnidipine was formulated by nanoprecipitation technique. A Nanoparticle increases the dissolution rate by decreasing the particle size to nanometer scale range and increasing the effective surface area of the drug. Here, Cilnidipine was selected for the formulation of Nanoparticles due to its low dissolution rate in water and thus low bioavailability. The objective behind this study was to optimize the processing parameter like drug concentration, polymer concentration, and solvent: antisolvent ratio, stirring speed by applying Plackett Burman Design and to study its effect on particle size, entrapment efficiency and rate of dissolution. ANOVA and Pareto chart were utilized to find the signicance of factor and extent of effect. They are further characterized by SEM also.

Keywords: Processing variables, Nanoparticulate System, Cilnidipine, and Plackett Burman Design.

P19

TITLE: -Statistical Design for Enhancement of Amylase Production from *Aeromonas sobria*

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Abstract

Amylase is an enzyme that catalyzes the breakdown of starch into sugars and plays a pivotal role in various industries like starch processing, textile, paper, biofuel, food and pharmaceuticals. The study was to isolate amylase producing bacteria and design the fermentation medium for high yield and low cost production of amylase. The isolation was performed by serial dilution. The isolates were screened for amylolytic activity by starch agar plate method. The isolate (potential strain) was identified as *Aeromonas sobria* by microscopic and biochemical study. Initial growth was checked on nutrient agar starch plate and effect of eight variables: glucose, starch, beef extract, NaCl, CaCl2, K2HPO4, MgSO4, incubation time were studied by Placket-Burman design using Design-Expert® software version 10. The optimal condition for amylase production were glucose 0.1%, beef extract 0.3%, starch 0.75%, MgSO4 0.73%, incubation time 52h and pH 7.0. Amylase activity was increased from 38.2 U/mL to 195.2 U/mL. 5.03 folds increase in amylase activity was achieved. The higher amount of enzyme yield was achieved with only one carbon and nitrogen source. Thus low cost and high yield production of amylase was obtained.

P20

FORMULATION AND EVALUATON OF TOPICAL LIPOSOMAL GEL CONTAINING NEEM EXTRACT FOR CANDIDA INFECTION

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Abstract

Liposomal carriers system have gained interest in topical treatment of fungal infection. So, the aim of present work was to prepare and evaluate topical liposomal gel containing neem extract by using thin film hydration technique. Factors were screened by using Placket-Burman design. For Optimization 3^2 full factorial design was applied Volume of organic solvent and Sonication time were taken as independent variable and particle size as dependent variable. Response plots and contour plots were drawn and optimum formulation were selected by check point batch analysis and desirability. The characterization of optimized batch was done by mean particle size, viscosity, pH, TEM. Rheological study of optimized batch revealed result having pH-6.5, Viscosity-4451cps, Spreadibility-11.2cm In addition antifungal activity was carried out for optimized formula and compared with the crude Neem extract, Neem oil and standard itraconazole. Skin irritation study on rabbits concludes that the formulation is safe for use on human skin.

Key Words: Neem extract; Placket-Burman design; 3^2 full Factorial design; Topical liposomal gel; Thin Layer Hydration

P21

SOLUBILITY ENHANCEMENT OF POORLY WATER SOLUBLE DRUG (NABUMETONE) BY SOLID DISPERSION USING HOT MELT EXTRUSION TECHNIQUE.

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ABSTRACT:-Nabumetone belongs to an anti-inflammatory drug used in the treatment of osteoarthritis, rheumatoid arthritis and as an analgesic. Nabumetone is practically insoluble in water and its oral bioavailability is 38%, due to it's poor aqueous solubility. As Nabumetoneis poorly water-soluble drug, its oral bioavailability can be improved by using solid dispersion technique. The objective of the present study was to improve the dissolution rate and oral bioavailability by improving its aqueous solubility using different hydrophilic carriers like PEG-4000, Kolliphor p 407, Soluplus, Kollidonva 64. The various formulations were prepared by Hot Melt Extrusion method using different carriers and in the ratios of drug and polymer (1:1, 1:2 and 1:3). The various formulations were evaluated for Saturated solubility, drug content uniformity, drug-polymer interaction, DSC, X-ray diffraction, SEM, *in vitro* drug release studies.

The optimized solid dispersion batch R3 (consisting of drug and Kolliphor p 407 in the ratio of 1:1) released 78.90 % in 60 minutes. Finally the formulation R3 Kolliphor p 407 was selected for, *in* vivo study was done in Wistar rat, Pharmacokinetic parameters like (Cmax, Tmax, AUC)were study. The results of *in vivo* study shows better *in vivo* release of formulation R3 as compare to the pure Nabumetone drug.

KEYWORDS:-Nabumetone, Solid Dispersion, Hot Melt Extrusion.

P22

PREPARATION AND EVALUATION OF NOVEL DRUG DELIVERY SYSTEM FOR NSAIDS

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Abstract

Aceclofenac is NSAID widely used for the long time treatment of arthritis, osteoarthritis, and rheumatoid arthritis. Aceclofenac is a BCS class II drug having low solubility and short half-life. To overcome this problem complex is formed using complexing agent Mono Ammonium Glycyrrihizinate. Complex is incorporated into the hydro dynamically balanced system. The prepared complex ratio has mixed with the low density polymer of HPMC polymer with different grades like HPMC K 4 M, HPMC K 100 M, HPMC 50 LV and different concentrations. Pre formulation studies carried out for the identification of drug and polymer and for the drug-excipient compatibility study. Complex is evaluated for various parameters like FTIR, DSC, drug content, and saturation solubility. The prepared HBS system were evaluated for various parameters like In vitro drug release, stability studies, X-ray diffraction, Scanning electron microscopy. The FTIR study of the complexes confirm hydrogen bonding between drug and polymer. Batch consist of HPMC K 100M gives the 81% of drug release over the 12 hrs and also give highest floating time.

P23

DEVELOPMENT OF MULTI-FUCTIONAL DIRECTLY COMPRESSIBLE CO-PROCESSED EXCIPIENT USING THE MELT AGGLOMERATION TECHNIQUE

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Abstract:

The objective of the present work was to prepare and evaluate mannitol and microcrystaline cellulose based, multifuctional directly compressible novel co-processed excipient using melt agglomeration technique for improvement of processing parameters. Various binders like PEG 6000, PVP K 30 and HPMC E3 LV were mixed with mannitol: MCC PH 101 either alone or in combinations as per simplex design. The agglomerates were evaluated in terms of %fines, Carr's index and angle of repose. The tablets were manufactured on a rotary press and their weight variation, friablity, hardness, tensile strength and disintegration time were evaluated. The optimized batch was characterized by means of FT-IR, DSC, particle size distribution, granular friablity index; heckle analysis, kawakita's and kuno's equations dilution potential study (30%paracetamol and 50% metformin HCL), drug release study and stability study. More than 80% drugs were released in 10 minutes. Batch F8 was considered optimum batch which is contained mean particle size 207 µm. The properties of agglomerated product, such as flowablity, compatibility, and

dissolution rate were improved extremely using the developed technique resulting in successful direct tableting without need to additional process of physical blending of agglomerates.

Key words: Co-processing; Direct compression; Melt agglomeration; Binders; Heckel plot

P24

FORMULATION AND EVALUATION OF COLON TARGETED ENTERIC COATED PELLETS OF BUMADIZONE CALCIUM.

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Abstract

Bumadizone Calcium is an acetic acid derivative, having irritation in stomach. Bumadizone Calcium has short half-life (4 hrs) and undergoes first pass metabolism. It's Solubility is pH- dependent. This research work was carried out to improve the bioavailability of the drug and to improve patient compliance by the oral colon targeted drug delivery system. Bumadizone Calcium sustained release enteric coated pellets were prepared, which minimize the release of drug in stomach for treatment of IBD formulated by Extrusion Spheronization process. EUDRAGIT S100, HPMC, and ETHYL CELLULOSE were used as rate controlling polymers. In this study, a pH dependent colon targeted enteric coated pellets was established using 3^2 full factorial design by giving enteric coating with Eudragit S 100. The optimized formulation containing PVP K-30 (1.5%) and Eudragit S 100 (5.36 %) showed minimum drug release 0.40% (2 hrs), 84.71% (12 hrs), and 86.94 % coating process efficiency (CPE) that were suitable for Enteric coated pellets. Pellets show no interaction between drug and polymer, surface of pellets was found to be smooth and uniform. Formulation shows excellent flow property.

Keywords: Bumadizone Calcium, Eudragit S100, Enteric coating, Extrusion Spheronization technique, 3^2 full factorial designs.

P25

DEVELPOMENT AND VALIDATION OF GAS CHROMATOGRAPHY-MASS SPECTROMETRY METHOD FOR SELECTED EXTRACTABLES AND LEACHABLES IN PHARMACEUTICAL FORMULATIONS

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Abstract

Extractables and leachables is a type of impurity and may present in final pharmaceutical product. Extractables are released from the surface during laboratory conditions while leachables are migrate from the surface during the life of product with the function of time and temperature. Extractables and leachables are enter into the product through various routes like primary packaging material, single use system components, residual cleaning agents, antistatic agents, secondary packaging material, ink and dyes, antioxidants and stabilizers, lubricants, emulsifiers, molding agents, vulcanizing agents, residual monomers, phthalates, polymer and monomers nitrosamine and polyaromatic hydrocarbon. Many modern analytical techniques like GC-MS/MS, LC-MS/MS AND IPS-MS have been employed on the basis of their chemical nature. In presented work Gas chromatography –mass spectrometry method was developed for selected lechables, namely cyclohexone, 2,4,7,9-Tetra methyl 5 decyne-4,7-diol, Benzophenone, Bis (2 ethyl hexyl) sulfosuccinate sodium salt. The developed method was validated according to ICH guideline.

Key Words: Extractable, Leachable, GC-MS, Pharmaceutical dosage form

P26

Herbal Excipients For Wound Dressing and Drug Delivery System

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Abstract :-

Synthetic polymers have been widely used in various biomedical applications like drug delivery, wound dressing, etc. They pose a question of bio-compatibility and bio-accumulation, limiting to a minimum class of synthetic polymers to be efficient and versatile. Hence, one cheap and reliant replacement is the use of natural adhesives over the synthetic adhesive polymeric system. The pluripotency of plant could be exploit, making it a perfect candidate for extraction of plant-derived adhesives component for wound dressing and drug delivery system in large-scale production. Current advancement use excipients which influence, the rate of drug release and absorption. Properties like matrix formation and environment responsive gelation can be exploited through these plant-derived components for controlled drug release according to specific therapeutic requirement. This review explores such plant-derived bioactive component: mucilage and gums, their isolation, and characterization which can be exploited as excipients in the formulation of drug delivery system as well as a wound dressing.

P27

COMPARITIVE STUDY OF ANTICANCER ACTIVITY OF TWO INDIGENOUS MEDICINAL PLANTS, EUPHORBIA THYMIFOLIA AND EUPHORBIA HIRTA.

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Abstract- The anti-cancer activity of many medicinal plants has been studied from decades. The following comparative study has been done with the plant known as **Dugdhika, Euphorbia thymifolia** is also known as **chhoti dudheli** and **Euphorbia hirta** which is also known as **badi dudheli**, both belong to the same family-**Euphorbiaceae**. Euphorbia thymifolia is used in many diseases such as- dysentery, enteritis, diarrhoea, venereal diseases. Euphorbia hirta is used in-Female disorders, sexual disorders, respiratory ailments, jaundice, gonorrhoea, tumours, etc. The study has been done using HUH-7 Hepatic cell line through MTT assay. MTT stands for 3-(4,5Dimethylthiazol-2-yl)-2,5-Diphenyltetrazolium bromide. It is a calorimetric assay for accessing cell metabolic activity and to determine the viability of drug treated cells, it is a yellow dye which is reduced by cellular enzymes to blue Formazan. The comparison of both the plants was done by taking the methanol extract of the whole plant of *E. thymifolia* and *E.hirta*. **As a result it was found that the IC_{50} value of E.thymifolia was 24.72µg/ml and the IC_{50} value of *E.hirta* was found to be19.25µg/ml.** From the results it can be concluded that the cytotoxic activity of *E. thymifolia* was greater than *E. hirta* due to higher amount of flavanoid content and it inhibited the growth of cytotoxic cells at lower concentration.

P28

FUNCTIONALITY IMPROVEMENT OF ACTIVE PHARMACEUTICAL INGREDIENT USING CRYSTALLO-CO-AGGLOMERATION APPROACH

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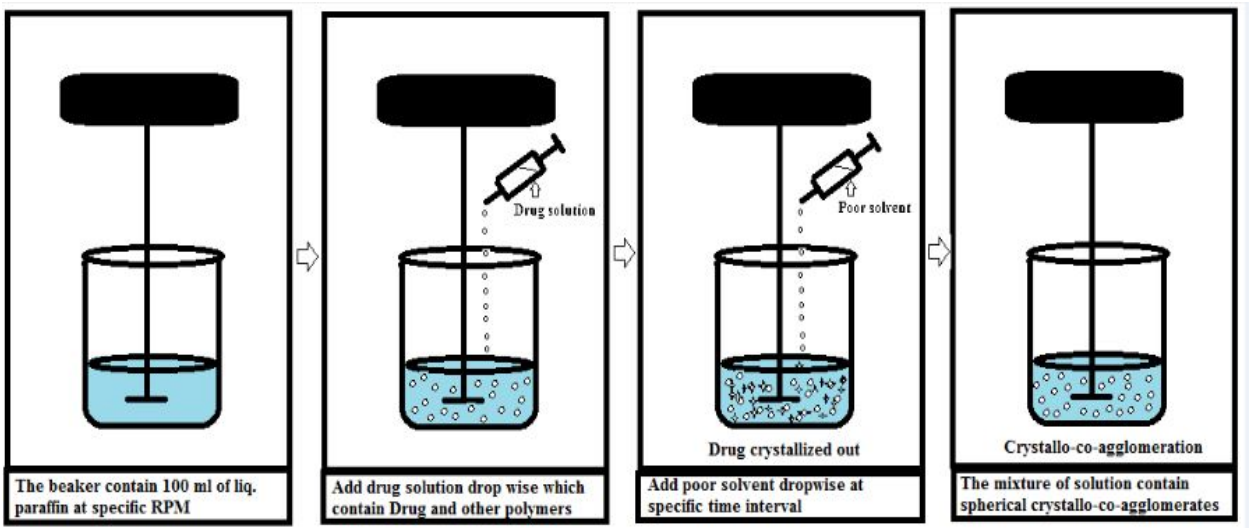
ABSTRACT

PURPOSE: Crystallo-co-agglomerates is an approach of particle engineering in which aggregate the crystals of Active pharmaceutical ingredients in the form of spherical particles. Metformin HCL is available as a crystalline fine powder which having poor flow and mechanical properties and hence it is a poor candidate for the direct compressible material.Thus, in the present research work crystallo-co-agglomerates technique was used to obtained agglomerates of Metformin HCL, to improve mechanical properties.

METHOD FOR PREPARING CRYSTALLO-CO-AGGLOMERATES:

The Crystallo-co-agglomerates was prepared by non-aqueous emulsion solvent diffusion technique.Crystallization protocol was decided in which the drug and other excipients was dissolve/dispersed into the good solvent and then add it drop wise into the external phase by that the system formulate the emulsion. And the external phase which was agitate continuously by using mechanical stirrer, after addition of poor solvent The counter-diffusion of the poor solvent by using droplets which induced crystallization of the drug within the droplet.



RESULT:

The prepared co-agglomerates were subjected for the evaluation of various parameters like micromeritic, mechanical properties, flow properties, compressibity, packability, Heckel plot analysis and dissolution kinetic study. Amongst various excipients used, selection was first made on the basis of flow properties and surface topography, and selected batches were then use into the design application into the work. Optimized agglomerates were further characterized by DSC, FT-IR, XRD and SEM study. DSC, FT-IR and XRD shows that there is no interaction with excipients. SEM photographs indicated the sphericity and surface morphology of crystallo-co-agglomerates.

CONCLUSION:

Overall the study shows that the crystallo-co-agglomerates approach is improve the physicomechanical properties of Metformin HCl and also improve the functionality of drug and convert into the highly compressible intermediate material which utilized by direct compression technique, instead of using lengthy and uneconomical as well as complicated approaches.

P29

Fabrication and Performanace, Verification of Co-processed Absorbent

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Aim: To perform studies co-processed absorbent.

Introduction: Absorbent used for conversion of liquid formulation to solid formulation has less absorption capacity and improper compressibility. To overcome this problem Novel co processed absorbent is developed. Co processed absorbent contain aerosil-200 and potassium polyacrylate. Aerosil is widely used as absorbent in SSEDDS. Potassium polyacrylate is potential absorbent. Aerosil has compressibility problem that can be solve by potassium polyacrylate and absorption improved.

Materials & Methods: Co-processed absorbent like Potasium Polyacrylate, Kaolin, PEG 6000, Aerosil, fuller's earth, Bentonite will be used as absorbent and find best excipient to absorb liquid formulation. Evaluation test were performed on excipient like absorbency test, Angle of Repose, Phi Value, Flowable liquid retention potential, Evaluation of flowability (flowthrough the orifice), Speed of Absorption, bulk density, tapped density, Carr's index.

Result and Discussion: By optimizing preliminary trial, it was concluded that aerosol-200 and potassium polyacrylate were suitable for co processed excipients. According to all evaluation criteria F_3 and F_5 batch is ideal for the formulation of novel co processed absorbent.

Conclusion: Novel co processed absorbent useful for reduce cost and improve characteristic of absorbent. From above result it was concluded that aerosil and potassium polyacrylate (1:9, 5:9) gives high absorbency and tablet compression.

Keywords: Co processed excipient

P30

COMPARISON OF STABILITY INDICATING RP-HPLC AND HPTLC METHODS FOR SIMULTENEOUS ESTIMATION OF TOLPERISONE HYDROCHLORIDE AND DICLOFENAC SODIUM

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Abstract

Chromatography is the powerful techniques which are used for separation of various pharmaceutical components from each other. HPLC and HPTLC are widely used methods for pharmaceutical purpose.Here we use a mobile phase consisting methanol: acetonitrile: water (80:16:4 v/v/v) Flow rate: 0.5 ml/min (pH-3 adjusted with ortho-phosphoric acid) gave better resolution of peaks in HPLC. Kromasil C18 (150mm X 4.6mm, 5µm) column was used and detection was carried out at 275nm (PDA detector). The retention time of tolperisone hydrochloride and diclofenac sodium were found at 2.93 min and 4.2 min respectively. The retention times were found to be 4.645 mins and 2.242 mins. The % purity of Tolperisone and Diclofenac sodium was found to be 100.3% and 99.27% respectively. The analytical method was validated according to ICH guidelines (ICH, Q2 (R1)). The linearity study of Tolperisone and Diclofenac sodium was found in concentration range of 50µg-250µg and 5µg-25µg and correlation coefficient (r2) was found to be 0.999 and 0.999, % recovery was found to be 99.56% and 99.48%, %RSD for repeatability was 1.2and 0.1, % RSD for intermediate precision was 0.4 and 0.1 respectively. The LOD value was 2.17 and 0.0372 where as LOQ value was 6.60 and 0.1125 Tolperisone HCL and diclofenac sodium respectively. The HPTLC method employed TLC aluminium plates precoated with silica gel 60F254 as the stationary phase. The solvent system consist of methanol: toluene: ethyl acetate (2.5:7:0.5 v/v/v) and saturation time was 25 min. The reliability of the method was assessed by evaluation of linearity (120-720 ng/spot forTolperisone hydrochloride and 40-240 ng/spot for Diclofenac sodium), accuracy (99.65 % for

Tolperisonehydrochloride and 100.75 % for Diclofenac sodium), precision, repeatability and specificity, in accordance with International Conference on Harmonization (ICH) guidelines. Diclofenac sodium degrade significantly in alkaline condition. Tolperisone HCL degrade significantly in acidic, oxidized and thermal condition.

Keyword: Diclofenac sodium, HPLC, HPTLC, stability, Tolperisone hydrochloride

P31

DEVLOPMENT AND VALIDATION OF STABILITY INDICATING HIGH PERFORMANCE LIQUID CHROMETOGRAPHY FOR RIFAMPICIN.

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Abstract:

The tuberculosis treatment is an increasing worldwide problem due to the fact that the effectiveness of modern chemotherapy has been blunted by the high incidence of primary drug resistance. The stability indicating method is employed for the analysis of stability of samples in pharmaceutical industry with the advent of international conference on harmonization (ICH) guidelines, the requirement of establishment of explicitly require conduct of forced decomposition studies under a variety of conditions, like pH, light, oxidation, dry heat, etc. and separation of drug from degradation products. Rifampicin in used mobile phase is HPLC grade acetonitrile and LR grade ammonium acetate and HPLC water. Stability indicating RP-HPLC method for estimation of rifampicin was developed by using column Gemini C18 (250mm×4.6mm, 5mm)using mixture of CAN-20Mm ammonium acetate (40:60 v/v)as the mobile phase at a flow rate of 1 ml/min and injection volume of 0.5µl.forced degradation study was performed at different time interval and different condition of rifampicin. This method developed and validated for estimation of rifampicin. The retention time of rifampicin was 13.8 min, linearity was found to be y=48467.9x-2165.09 in the range of 0.5-100µg/ml. accuracy of rifampicin was found as a recovery study in the range 100.7-101.6% and precision was found to be less than 2%RSD. The detection limit and quantitation limit wher 0.23 and 0.72 µg/ml and all other parameters were found within the specified criteria as per ICH guidelines. Rifampicin was highly susceptible to acid and alkaline hydrolysis and less susceptible to oxidative photolytic and thermal degradation. A rapid, sensitive and stable liquid chromatography tandem

mass spectroscopy (LC-MS) method has been developed and validated according to the ICH guidelines for rifampicin. Stability indication method for estimation of rifampicin was highly susceptible to acid and hydrolysis and less susceptible to oxidation, thermal and photo degradation.

Key Words: Degradation Condition, HPLC, Rifampicin, Stability Indicating Method, Validation Method.

P32

DEVELOPMENT AND VALIDATION OF RAPID AND SENSITIVE LC/MS/MS METHOD FOR QUALIFICATION OF VERAPAMIL AND ITS METABOLITE IN HUMAN PLASMA

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ABSTRACT

Bio-analytical method is defined as analysis of sample or analyte or drug in biological fluid e.g plasma, serum, urine, blood, tissue etc. Liquid Chromatography Mass Spectrometry (LC-MS/MS) used in drug development at many different stages. It is an exceedingly sensitive and specific analytical technique that combines the physical separation capabilities of liquid chromatography (or HPLC) with the mass analysis capabilities of mass spectrometry (MS). It precisely determines the identities and concentration of compounds within your sample. Verapamil and its metabolite norverapamil is a calcium channel blocker. It works by relaxing the muscles of your heart and blood vessels so used to treat hypertension (high blood pressure), angina(chest pain), and certain heart rhythm disorders. A rapid and sensitive liquid chromatography – tandem mass spectroscopy (LC/MS/MS) method for the qualification of Verapamil and its metabolite norverapamil in human plasma using Carbamazepine as Internal Standard has been developed and validated bio- analytical method using liquid- liquid Extraction procedure by 0.1 N NaOH in water as extraction buffer. Samples were then analyzed by HPLC

on a column, Kromasil (C18, 100mm x 4.6mm, 5µm) using mobile phase consisting of 2mM Ammonium Acetate buffer(pH 5.9) : Methanol (40:60% v/v) delivered at 0.6mL/min. Detection was performed using a Shimadzu – 8030 mass spectrometer. Electron spray Ionization was used for ion production. The assay were linear over the range 1.00- 500 ng/mL for Drug.(Verapamil) and 1.00-500ng/mL for metabolite (norverapamil) with intra and inter day precision of 3.38 – 6.40% and 3.37-5.63% and 2.60-5.18% and 2.29- 7.42% , accuracy in the range of 94.96 to 107.56% and 95.42 to 108.95% and mean recovery were 96.13% and 98.84% for verapamil and norverapamil respectively. This method can be used for quantification of Verapamil and its Metabolite (Norverapamil) in human plasma for Bioequivalence studies.

Key Words: Verapamil, Norverapamil, LC/MS/MS, Method Validation

P33

ASSESSMENT OF PESTICIDE RESIDUE IN VEGETABLES AVAILABLE FROM RAJKOT CITY BY LC-MS/MS AND METHODS OF MINIMIZING ITS DIETARY EXPOSURE.

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Abstract

Pesticides have been widely used throughout the world since the middle of the 20th century. Pesticides include all materials that are used to prevent, destroy, repel, attract or reduce pest organisms. Insecticides, herbicides, fungicides and rodenticides are some of the more well-known pesticides. The pesticides are of various types according to their chemical structure i.e. Organophosphate ,Organochlorine, Carbamates, Pyrethroids and sulphonyl ureas etc. According to small survey in Rajkot region a class of Organophosphate pesticides are selected i.e. Acephate, Chlopyrifos, Ethion, Phorate, Quinalphosect as these are widely used in

this region. Many modern analytical techniques like GC-MS and LC-MS/MS have been employed for characterization and identification the pesticide residue from vegetables. In current work a precise, sensitive and reproducible LC-MS/MS method was developed and validated for analysis of pesticide residue in selected vegetables as per the SANCO guideline. Different household method was employed and suggested to minimize their dietry exposure especially from selected vegetables.

Key words: Pesticide residue, multi-residue method, Organophosphate pesticides, vegetables, LC-MS/MS.

P34

IN VITRO HERB DRUG INTERACTION IN COMBINATION THERAPY OF *GINGER* WITH *ACECLO-PARACETAMOL*

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Abstract

The problem of herb drug interaction seems to be more over the practice of herbal medicine. Till this date very few reports have been recorded on herb drug interaction. The effect of drug on a person may be different than expected because the drug interacts with another drug the person is taking (drug-drug interaction) or another disease the person has (drug disease interaction) or the herbal supplement/medicines person consuming (herb drug interaction). The present research work aimed to evaluate the anti-inflammatory activity of Ginger (*Zingiber officinalis*) methanolic and aqueous extract (Test) and methanolic and aqueous extract of Ginger with Aceclo-paracetamol&Aceclo-paracetamol(standard alone). The anti-inflammatory activity of methanolic extract of Ginger (test), Ginger in combination with Aceclo-paracetamol and Aceclo-paracetamol (standard) was evaluated by examining its ability to stabilize the membrane of hypotonicity-induced red blood cells(RBC). The percentage of membrane stabilization for methanolic and aqueous extract of ginger and aceclo-paracetamol were done at different concentrations. The maximum membrane stabilization of extracts *zingiber officinalis* was found to be 86.34% at a dose of 50µg/ml, standard Aceclo-paracetamol membrane stabilization was found to be 91.16% at a dose of 500µg/ml of methanolic extract and the membrane stabilization for combination of ginger with Aceclo-paracetamol was found to be 86.43% at a dose of 50

µg/ml as the concentration increase for the combination the percentage protection was decreased.

Keywords: HRBC (Human red Blood cell) Membrane Stabilization, *Zingiber officinalis*, Aceclo-paracetamol

P35

EFFECT OF SODIUM CHANNEL BLOCKERS ONINTRA OCULAR PRESSURE IN EXPERIMENTALMODELS OF GLAUCOMA

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Abstract:

Objective: To study the effect of sodium channel blockers on intra ocular pressure in experimental models of glaucoma.

Methodology:

Albino rabbits weighing 1.5 to 2.5 Kg were selected for the study and divided into two group's acute and chronic glaucoma model. Acute glaucoma was induced by 5% dextrose solution (15 ml/Kg) given intravenously in marginal ear vein. Rabbits were pre-treated with 0.1 ml of pilocarpine (40 mg/ml), timolol (5 mg/ml), bupivacaine (5 mg/ml), procainamide (80 µg/ml), propafenone (1.21 µg/ml), lacosamide (363 µg/ml), flecainide (2.9 µg/ml) and carbamazepine (9.45 ng/ml). Chronic glaucoma was induced by injecting 150 units of freshly prepared α-chymotrypsin in posterior chamber of eye. Treatment of drug and saline were given sub-conjunctival in right eye and left eye which served as treated and placebo respectively. The intraocular pressure (IOP) was measured at initial and at the time interval of 30 min until stable pressure obtained in both models.

Results:

Infusion of 5% dextrose solution and administration of α-chymotrypsin significantly increased the IOP in acute and chronic model respectively. Sodium channel blockers like bupivacaine, procainamide, propafenone and lacosamide significantly attenuated increase in intraocular pressure in acute glaucoma model. Flecainide significantly inhibited increase in

intraocular pressure in acute glaucoma model but not to chronic model. No change was observed in carbamazepine treated group in both glaucoma models.

Conclusion:

Bupivacaine, procainamide, propafenone, and lacosamide reduced the intraocular pressure in acute glaucoma and chronic glaucoma while flecainide decreased intraocular pressure only in acute glaucoma. Carbamazepine was found ineffective in both acute and chronic glaucoma. The variation in efficacy was independent to the log P value of drug. Drugs with higher half-life such as flecainide and carbamazepine were less effective as compared to shorter half-life.

P36

IMPROVED ANTI-TUMOUR ACTIVITY OF N-MUSTARDS VIA DNA DIRECTED APPROACH

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ABSTRECT:

After completion of half century of chemotherapy research, still cancer remain challengeable life threatening disease and difficult to treat because of several factor like tumour diversity, drug resistance tumour invention, mutation etc. So, it is major challenge to medicinal chemist to identify or synthesis therapeutic agent to kill malignant cells with high selectivity and low toxicity. Initially Many natural compound or synthetic drugs used for cancer therapy. These anticancer agents include alkylating agent cross-linking DNA and blocking cell division. N-mustard derivatives can induce interstrand cross-links between two strands of DNA. There by inhibiting replication and also shows the cytotoxic activity. The usefulness of many DNA alkylating drugs is often limited by the number of pharmacological deficiencies including intrinsic chemical reactivity which lowers the drug potency and precisely targeting the geometric sites of DNA is difficult.

The therapeutic utility of the alkylating agents would be greatly enhanced if they could be more precisely targeted to the defined geometric sites of DNA. Therefore, use of DNA affinic carrier molecules to link with the N-mustards would be innovative approach. Through this approach several new DNA-directed alkylating agents have been developed. These studies clearly demonstrated that alkylating agent (N-mustard) targeted to DNA by attachment to DNA affinic carriers have generally show altered sequence selectivity of DNA alkylation. Higher cytotoxicity and enhanced

in-vivo antitumor efficiency compared with the corresponding 'untargeted' mustard. In the present study several DNA directed N-mustards and its biological profile are discussed.

Keywords: Anticancer, N-mustard derivatives, DNA alkylating agents, cytotoxicity, DNA directed N-mustards.

P37

Density, Refractive Index and FT-IR Study of Bioactive Molecule from Eucalyptus oil with 1,4-Dioxane and Cresols.

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Abstract

Natural products have provided a rich source of small bioactive molecule with greater medicinal properties. Eucalyptol oil, also known as cajeputol or 1,8-cineole, is a small bioactive molecule found in many plant essential oils. Recent evidence show that 1,8-cineole possesses anti-inflammatory, anti-microbial, and antioxidant activity. Literature survey reveals that primary physical properties like density and refractive index are key thermodynamic properties that find application in study of essential oils. The interaction between molecules of essential oils with solvents in solution state have shown a great need for understanding the nature of solute-solvent and molecular interactions occurring in the solution. Thermodynamic analysis in addition to FT-IR spectroscopic study are highly useful tools in understanding the molecular interaction between essential oils and solvents. In this study, density, excess molar volume, refractive index and deviation in refractive index of ternary mixtures of

1,8-cineole with 14-dioxane and cresols has been measured over the entire composition range expressed by mole fraction (x_1, x_2 and x_3) of the 1,8-cineole at 303.15, 308.15 and 313.15 K at atmospheric pressure. The FT-IR measurements were carried out at 298.15 K. The various experimental data have been calculated and had fitted to Redlich-Kister polynomial equation. The observed values of different parameters were explained on the basis of the intermolecular interactions present in these mixtures. The position, pattern and intensity of band as per FT-IR data strongly supports the conclusion that molecular interactions have taken place.

Keywords: Density, Excess Molar Volume, Refractive Index, Deviation in Refractive Index, FT-IR Spectroscopy.

P38

STABILITY INDICATING RP-HPLC METHOD DEVELOPMENT AND VALIDATION FOR SIMULTANEOUS DETERMINATION OF SOFOSBUVIR AND DACLATASVIR IN TABLET DOSAGE FORMS

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Abstract

New Stability indicating RP-HPLC method was developed for the simultaneous estimation of Sofosbuvir and Daclatasvir in its pharmaceutical dosage form and developed method was validated. Column use for that was Phenomenex C18 (150 mm×4.6mm, 5µ) column using mobile phase on water and acetonitrile (50:50% v/v) in isocratic mode. Flow rate of mobile phase 1.0 ml/min and column oven temperature is maintained at 30°C. the retention time for Sofosbuvir and Daclatasvir were found to be 3.06 min and 4.76 min respectively. Validation of method was done as per ICH guidelines. The method was found to be accurate, precise, specific and robust. The method obeys Beer's law at a concentration range of 50 µg/ml – 500 µg/ml of sofosbuvir and 7.5 µg/ml – 75 µg/ml of daclatasvir, with correlation coefficient of 0.999 for both the drugs. The drugs as well as their degradation products produce in stress study were separated using this developed method.

Key Word

Sofosbuvir, Daclatasvir, HPLC, Method development, Validation, Force degradation

P39

Formulation development and evaluation of Permethrin Gel for treatment of scabies disorder

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In Current Research Work, Permethrin Gel Formulation Was Prepared With Carbopol 934 As Gelling Polymer. Permethrin Is Having Excellent Effect On Mites And Use In Scabies. The Gel Formulation In Present Research Work Was Tried Using Many Co-Solvents For Dissolving Permethrin Like Propylene Glycol, Poly Ethylene Glycol 400 Etc. The Prepared Gels Were Evaluated For Gel Strength, Gelling Capacity, Ph, Viscosity, In Vitro Diffusion Study Etc. Permethrin Was Analyzed By Hplc Method For In Vitro Diffusion Study At 225 Nm Wavelength. The Prepared Permethrin Gel Formulation Can Also Be Used By Spraying On Clothes Or Mosquito Net For Mosquito Related Problems.

P40

A Review *On Ideonella Sakaiensis* Plastic Eating Bacteria

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Abstact

Ideonella sakaiensis is a Gram-negative, aerobic, non-spore forming, rod-shaped bacterium. It has a polar flagellum that allows for motility. In addition, the strain was positive for both the catalase and cytochrome oxidase tests.

The bacterium was isolated from a consortium of microorganisms in the sediment sample, including protozoa and yeast-like cells. The entire microbial community was shown to mineralize 75% of the degraded PET into carbon dioxide once it had been initially degraded and assimilated by *I. sakaiensis.*

Plastic waste has been known as the most unsolved environmental problem in this world. Instead of what have been expected, the amount of plastic waste is increasing significantly in years.scientists discovered a strain of bacteria that can literally eat the plastic used to make bottles, and have now improved it to make it work faster. ... This splits certain chemical bonds (esters) in PET, leaving smaller molecules that the bacteria can absorb, using the carbon in them as a food source. The original *Ideonella sakaiensis* bacterium is far from the first living species to possess plastic-eating proclivities. Ideonella sakaiensis as it breaks down the limitation of where the bacteria can survive. As a result, the problem of plastic waste can be solved effectively without damaging the environment and automatically form a sustainability in nature and life.

Keyword: Pet Plastic, bacteria, Enviroment, Arobic, Carbon Source, Plastic waste

P41

ISOLATION, CHARACTERISATION AND SIMULTANEOUS ESTIMATION OF ACTIVE CONSTITUTENTS IN DRIED BARK OF *Adenanthera pavonina*

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ABSTRACT

A simultaneous quantitative estimation of two biologically active compounds viz. a steroid compound, Stigmasterol and atriterpenoid compound, Lupeol in the bark of the plant *Adenanthera pavonina* was performed using HPTLC. Stigmasterol and Lupeol were isolated from the bark of *Adenanthera pavonina* and were characterized by physicochemical and spectrophotometric methods. The separation was performed on TLC aluminium plates pre- coated with silica G60 F_{254} followed by detection of Stigmasterol and Lupeol by derivatizing the plate with vanillin-phosphoric acid reagent. Camag TLC scanner 3 equipped with CATS4 software was used for densitometric scanning at 550 nm. The mobile phase Toluene: methanol (92: 8 v/v) with saturation time of 15 min gives the good resolution for Stigmasterol and Lupeol at R_f 0.43 ± 0.02 and 0.55 ± 0.02, respectively. The proposed method was validated in terms of linearity, precision and accuracy as per the International Conference on Harmonization (ICH) guidelines. Linearity range was 100-500 ng/spot with average % recovery of 95.16% for Stigmasterol and 400-2000 ng/spot with average % recovery of 95.3% Lupeol. The correlation coefficient for Stigmasterol and Lupeol was 0.996 and 0.993, respectively. The LOD and LOQ for Stigmasterol were found to be 11.74 and 35.58 ng/spot, respectively

and for Lupeol 90.44 and 274.06 ng/spot, respectively. A simple, sensitive and selective HPTLC method for simultaneous estimation of stigmasterol and lupeol in bark of *Adenanthera pavonina* was developed and the method has been successfully applied for simultaneous estimation of Stigmasterol and Lupeol in bark of *Adenanthera pavonina*.
KEYWORDS: *Adenanthera pavonina*, HPTLC, Stigmasterol, Lupeol

P42

Medicinal devices- current status and future scope

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ABSTRACT:

A medical device is any apparatus, appliance, software, material, & other article whether used alone or in combination, including the software intended by its manufacturer to be used specifically for diagnostic and therapeutic purposes. Patients himself or a healthcare professional can easily tests & acquire all necessary data to diagnose or maintain the desired range for the particular disease. Medical devices have become such a vital part of modern healthcare that practically no diagnosis or treatment is possible without them. Medical software application is designed to give devices a range of functionalities. From power and non power medical devices mainly power medical device are classified as Equipment, Implants and Disposables. Every day more than 50000 different kinds of medical devices are estimated to be used in health care facilities and elsewhere all over the world. Currently there are 5 new devices (2017) are invented recently such as medical radar, 3D bioprinting of tissue, Smart probe, Electromagnetic acoustic imaging and Treating stroke with nanobots. The global medical device market is worth over US$ 150 billion, with the US, European and Japan having over 65% of the market shares. The medical device industry is poised for steady growth, with global annual sales forecast to rise by over 5 percent a year and reach nearly US$800 billion by2030. These projections reflect increasing demand for innovative new devices (like wearables) and services (like health data), as lifestyle diseases become more prevalent, and economic development unlocks the huge potential in emerging markets – particularly China and India.

P43

ANTI-SOLVENT CO-CRYSTALLIZATION OF DIACEREIN AND β-RESORCYLIC ACID WITH IMPROVED BIOPHARMACEUTICAL PROPERTIES

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Abstract

Crystal engineering has become enormous attention to the pharmaceutical scientists as a new strategy to modify the pharmaceutical properties of APIs without changing the efficacy of the drug. The present work was aimed to prepare a novel 1:3 co-crystal of Diacerein (DIA) with β-Resorcylic acid (RA) using anti-solvent method. In this study, DMSO and distilled water were chosen as solvent and anti-solvent respectively. The nucleation and crystal growth of DIA-RA co-crystal were examined to established optimal conditions. Their physicochemical properties were characterized using DSC, PXRD, FT-IR and SEM. Simultaneous improvement in physico-chemical behaviors of prepared co-crystal suggested the superior functionality as compared to DIA. Significant enhancement in bioavailability was observed in the prepared co-crystal (3.2 times) compared to DIA. Thus, produced co-crystal having fast dissolving capabilities, improved tablet ability and enhanced *in-vivo* performance make them more favorable candidates for better dosage form development.

P44

FORMULATION AND EVALUATION OF IN SITU GEL OF ORNIDAZOLE FOR PERIODONTAL DRUG DELIVERY.

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The objective of present work was to formulate and evaluate the in situ gel for local delivery in periodontal disease of Ornidazole to overcome the problem with systemic drug delivery. Cold process was used to prepare in situ gel. The influence of independent variables like poloxamer 407 and carbopol 934P on dependent variables like gelation temperature, viscosity, % drug release at 1 hr and $t_{90\%}$ was checked by 3^2 full factorial design. DSC & FTIR showed that no interaction between drug & polymers. MIC of Ornidazole was found to be 480 µg/ml against S. aureus by micro dilution method. Favorable thermosensitive gelling properties were obtained with formulations containing 0.272%w/v carbopol 934P and 15.98%w/v poloxamer 407 polymeric ratio which gave release upto 10 hours. Zone of inhibition of pure drug & formulation was found to be similar. From kinetic study, it was concluded that in situ gel of Ornidazole follows zero order kinetics.

Key words: in situ gel, periodontal disease, Ornidazole, poloxamer 407, carbopol 934P.

P45

METHOD FOR THE SIMULTANEOUS QUANTIFICATION OF TELMISATAN AND CHLORTHALIDONE IN PLASMA AND ITS APPLICATION IN PHARMACOKINETIC STUDY

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Abstract

Hypertension is defined as a sustained increase in blood pressure ≥ 140/90 mmHg, a criterion where risk of hypertension-related cardiovascular disease is high enough to merit medical attention. Chlorthalidone and telmisatan combination is used as an anti-hypertensive. Prime aim of the present work is to develop simple, rapid and sensitive method for simultaneous estimation of telmisatan and chlorthalidone. LC-MS detection was carried out using ESI positive and negative ionization using multiple reactions monitoring of the transition at m/z 515.90→276 for telmisatan and m/z 337.1→190.05 for chlorthalidone respectively. For telmisatan and chlorthalidone the method was linear (R^2 ≥ 0.995) within range of 6-1200 ng/ml and 3-600ng/ml respectively. The C_{max} for telmisatan and chlorthalidone was found to be 1137.25±234.32ng/ml and 346.34 ±45 ng/ml respectively.

P46

TITLE: **A QUALITY BY DESIGN APPROACH FOR BACOSIDE NANOSUSPENSION FOR IMPROVED SOLUBILITY AND HERBAL DRUG REGISTRATION: AN INDIAN, US AND EU PERSPECTIVE**

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Abstract

The present research work was aimed at preparing nanosuspension of a poorly soluble model herbal entity, *Bacopa monnieri* for enhancing its solubility and bioavailability using a novel QBD approach with the help of high pressure homogenization. The response surface methodology was applied for the production of optimized nanosuspension. Box-bencher design was applied for optimization of formulation. The prepared suspension was dried by freeze drying to get dry nanoparticles. The nanoparticle was stabilised by using PVA. The prepared nanosuspension were evaluated for its particle size,zeta potential, re dispensability index, solubility and dissolution studies. The formulation was characterized by instrumental techniques like XRD, DSC, FTIR analysis.

P47

Formulation development of an *in situ* gelling buccal spray containing Fluconazol for treatment of oral fungal infection and regulatory perspective of clinical guidelines for the treatment of fungal infection

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ABSTRACT:

The present work was to formulate *in situ* buccal spray to treat microbial infection in oral cavity to overcome systemic drug delivery problems and to study clinical guidelines for the treatment of fungal infection of different countries to know regulatory perspective of our antifungal agent. In the buccal route, drug could be directly applied and absorbed at site of infection and there would less systemic side effect as oral delivery, so buccal route could be the best way to treat oral infection.

The drug and polymers were characterized by DSC and FTIR study. Antifungal study was carried out by disc diffusion method against *Candida albicans.* Cold process was used to prepare *in situ* gel by using pH sensitive polymer carbopol 934 together with alternative mucoadhesive as well as viscosity increaser polymer i.e. HPMC K100M.

The study of both instrument showed no interaction between drug and polymer. Fluconazole is frequently used in candidiasis especially in mucosal candidiasis, so it's better to provide it at site of infection with the help of *in situ* buccal spray than in whole systemic circulation by oral administration.

P48

Screening Of Most Effective Variables For Development Of Telmisartan Liposomes By Taguchi Design

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Abstract

The objective of this study was the selection of most influential variable for the preparation of telmisartan liposomes. Liposomes were prepared by slurry method; effect of formulation and processing variables on various response variables were studied by a taguchi standard orthogonal array l8 design. Independent variables studied were the amount of drug, amount of lipid, amount of cholesterol, amount of career, speed of rotaevaporator, temperature and hydration time. The dependent variables studied were the particle size and % entrapment efficiency. The size of all liposomes formulations prepared as per the experimental design(taguchi screening design) varied between 100.3nm to1000.5 na and entrapment efficiency between 41.23 to 89.71. Pareto ranking analyse showed the two most important factor affecting the selected response were amount of lipid and amount of cholesterol.

Keyword: Liposomes, Telmisartan, Slurry Method.

P49

Bio natural juice

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Bio natural juice is a globally popular health beverage originating in the tropics. Traditional Tahitian healers believe the bio natural plant to be useful for a wide range of maladies, and bio natural juice consumers throughout the world have similar perceptions. Nevertheless, human clinical trials are necessary for a precise understanding of what the health benefits of bio natural juice are. A review of published human intervention studies suggests that bio natural juice may provide protection against tobacco smoke-induced DNA damage, blood lipid and homocysteine elevation as well as systemic inflammation. Human intervention studies also indicate that bio natural juice may improve joint health, increase physical endurance, increase immune activity, inhibit glycation of proteins, aid weight management, help maintain bone health in women, help maintain normal blood pressure, and improve gum health. Further, these studies point to notable antioxidant activity in bionatural juice, more so than other fruit juices which served as trial placebos. It is this antioxidant effect and its interaction with the immune system and inflammation pathways that may account for many of the observed health benefits of bio natural juice. However, the existing evidence does have some limitations as far as its general application to bio natural juice products; all the peer-reviewed human interventions studies to date have involved only one source of French Polynesian bio natural juice. Geographical factors and variations in processing methods are known to produce commercial bio natural juice products with divergent phytochemical and nutrient compositions. Therefore, other sources of bio natural juice products may have different toxicological and pharmacological profiles.

P50

Formulation and evaluation of poly-herbal cream with respect to psoriasis

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The extracts and oils are very rich source of biologically active compound like antioxidants, antimicrobial etc. In this study, Neem, Tulsi, Aloe vera, Gilloy, Haldi, Cedar wood oil, Black cumin oil, Rose marry oil, Carrot seed oil, Tea tree oil are tested for their antioxidant and antimicrobial activity. The antioxidant activity was checked by DPPH method in free from of extracts of tested source. Antimicrobial activity was checked as well against most common microbial strain like *Bacillus subtilis, Stephylococcus aureus, Escherichia coli, Saccharomyces cerevisia.* The amount of antioxidant component like ascorbic acid, DPPH, methanol were also checked by spectrophotometry. From this work the extract gave highest activity. Antimicrobial activity of cream was found most significant against Escherichia coli. The finding of this work has potential herbal application.

P51

STUDIES ON THE HORMONES AND NUTRIENTS FOLIAR APPLICATION ON *JETROPHA CURCAS* SEEDLINGS

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Growth of plant is structured by some environmental factors, nutrient obtainability and light as well as some endogenous factors like plant gowth hormones. The growth is controlled by the indigenous phytohormones and has contributed significantly to increasing yield carry over the green revolution. Therefore, a better understanding of the regulation of organ growth and size is relevant to improve rational approaches in plant breeding of *Jetropha curcas* (A biofuel plant). To overcome problems regarding limited plant growth in waste lands, we studied on the foliar effect of plant hormones and some nutrients on *Jatropha curcas* plant. In our study, the foliar application of plant hormones such as kinetin, GA_3, BAP (0.01ml/L, 0.1ml/L, 0.5ml/L) and some plant nutrients like MS (4.41gm/L) and Hifoliar (4gm/L) has shown growth promoting effect on *Jatropha curcas* seedlings. The results reveals that there are some role of plant hormones (kinetin, GA_3, BAP) and nutrients (MS and Hifoliar) may influence root architecture and shoot development, chlorophyll content , number of stomata and nitrogen content in the plant. Kinetin and GA_3 has significant effect on chlorophyll content, root and shoot development, number of stomata and nitrogen content in the plant. GA_3 (0.5mg/L) gives the highest amount of carotenoids and chlorophyll. KN 0.5mg/L and GA_3 0.5mg/L has more number of roots, root length and moisture content in *Jatropha curcas* seedlings as compared to control. Moreover, there is no any estranging effect of any plant hormone as well as plant nutrients on the plant.

Key Words: Phytohormones, *Jatropha curcas,* Foliar effect

P52

Formulation, Development and Evaluation of Sublingual Tablet of Benidipine Hydrochloride

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Abstract:

The sublingual tablet of Benidipine Hydrochloride were prepared by using direct compression method using various excipients. Preliminary batches were prepared and these tablets were evaluated for different parameters for the selection of the excipient. With the selected excipients tablets containing drug were formulated and also evaluated.3^2 full factorial design was applied to optimize the disintegration time and the % cumulative drug release. The concentration of crospovidone (X1) and concentration of beta- cyclodextrine (X2) were taken as an independent variables while disintegration time (Y1) and % cumulative drug release (Y2) were selected as a dependent variables. Finally, a optimized batch was selected depending upon the release and check point batch was prepared and compared with the marketed formulation. Stability studies were done. This batch was showing best disintegration time of 6 seconds and % cumulative drug release of 99.57%. By contour plot and 3D surface graph check point batch was prepared. On which stability studies and market product comparison was done. Sublingual tablets of Benidipine Hydrochloride were successfully prepared by which the first pass metabolism was avoided and solubility was increased which leads to the better bioavailability of drug.

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FORMULATION, DEVELOPMENT AND EVALUATION OF IMMEDIATE RELEASE TABLET OF APIXABAN

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Immediate release tablets of apixaban were prepared by direct compression method using super disintegrant Kyron T-314. Poloxamer, a non-ionic surfactant was used to improve solubility and permeability of the drug. Conc of Drug:Poloxamer and Kyron T-314 were selected as Independent Variable. The dissolution t90% and DT were selected as dependent variable. The tablets prepared were evaluated for hardness, thickness, friability, DT and in vitro dissolution profiles and in vitro permeation was done. FTIR Studies were conducted for establishing drug excipient compatibility. A 3^2 full factorial design was applied. Nine batches were formulated. The batches were evaluated. The overlay plot in design expert gave the optimized batch. Batch F4 was found to be best having disintegration time 29 sec and % drug release 96.16%. Immediate release tablets of Apixaban were successfully formulated by direct compression along with improved performance in Disintegration and dissolution.