# CONTEMPORARY TRENDS, CHALLENGES AND INNOVATIONS IN PHARMACEUTICAL SCIENCES

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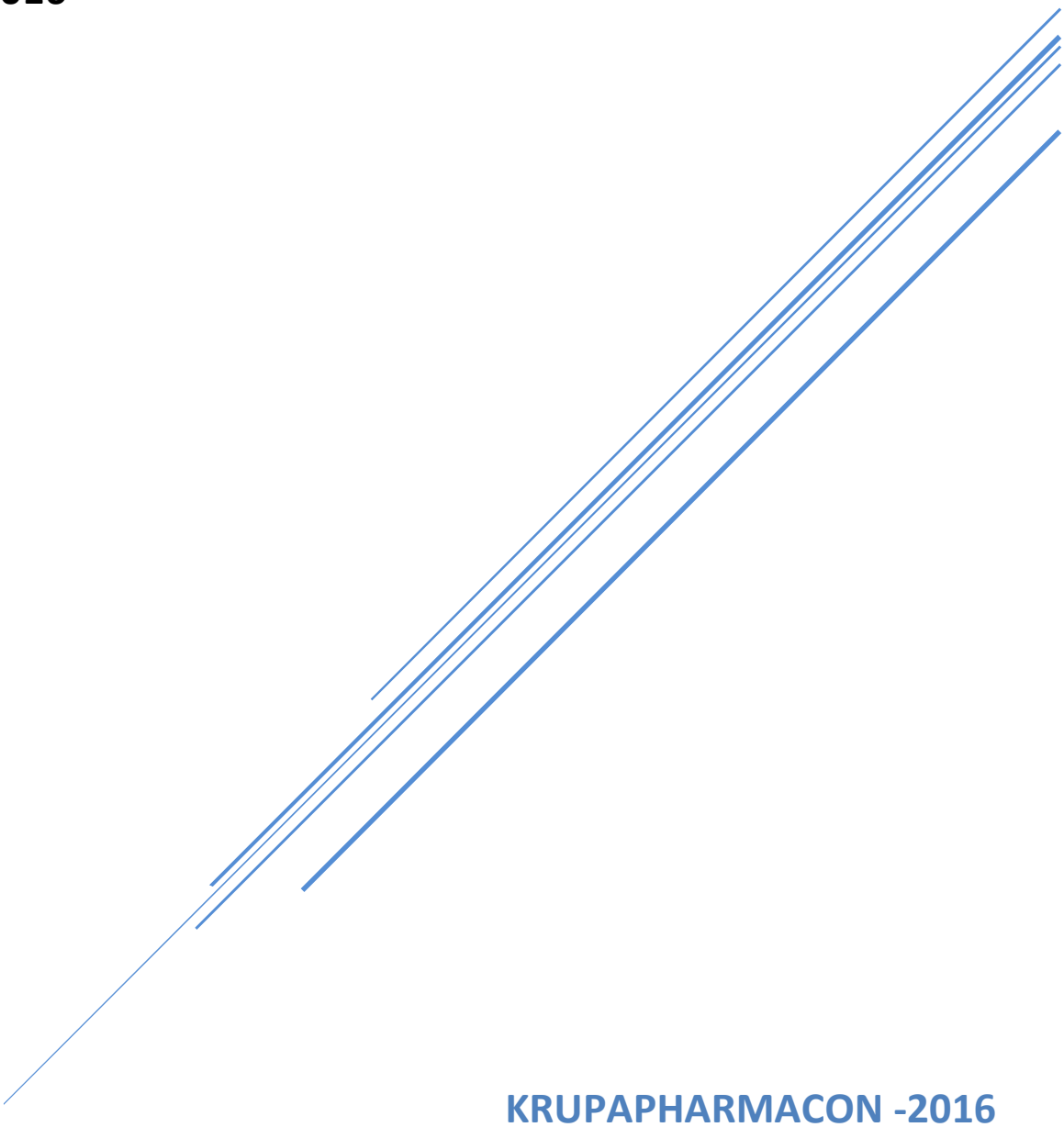

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## S1: BROAD SPECTRUM UVA & UVB PHOTOPROTECTANTS: AN OVERVIEW

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### ABSTRACT

Due to the high exposure of our skin to sunlight which mainly comprises of ultraviolet radiation, a harmful effect is manifested on the skin and the integumentary system. Sunscreens are formulated which safeguards the epidermis of the skin from harmful UV radiations by reflecting, absorbing or by dispersion phenomena. This review focuses on the beneficial aspects of sunscreen and also presents a detail exposition about its formulation aspects and evaluation. The review introduces sunscreens and its traditional, chronological usage of sunscreen. The formulation and development of sunscreen emphasis on various UVA and UVB photo protectants used and its evaluation parameters is studied. Findings: Sunscreens are found to show the photo-protecting properties by absorption or by reflecting mechanism, which has a shielding effect towards the skin against harmful radiations. Sunscreens protect the skin absorbing or reflecting ultraviolet radiations. The application of sunscreens is an efficient method of protecting skin against UV radiations. Hence a sunscreen plays a vital role in protecting the skin from external harmful radiations.

## S2: A BREIF REVIEW ON SUSTAIN RELEASE MATRIX TYPE DRUG DELIVERY SYSTEM

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### ABSTRACT

A review on sustained release drug delivery using polymer matrix with emphasis on its contemporary usage and future trends. Approach: An introduction to sustained release drug delivery system (SR DDS), followed by its rationale, advantages, disadvantages, criteria of a drug to be met to formulate sustained release formulations, classification of matrix tablets, classification of polymers, its mechanism and recent advancements. Finding: Recent studies indicate that sustained delivery for a very long period, in terms of months is possible using suitable polymer matrices. Also, challenging drug candidates such as proteins are now successfully delivered as sustained release dosage forms. Sustained release DDS, since 1940s has evolved in different types of dosage forms for sustained effect but future scope will be to treat chronic diseases providing sustained effect.

## S3: SUBLINGUAL TABLETS AND THE BENEFITS OF THE SUBLINGUAL ROUTE OF ADMINISTRATION

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### ABSTRACT

Sublingual drug delivery can be an alternative and better route when compared to oral drug delivery as sublingually administered dosage forms bypass hepatic metabolism. A rapid onset of pharmacological effect is often desired for some drugs, especially those used in the treatment of acute disorders. Sublingual tablets disintegrate rapidly and the small amount of saliva present is usually sufficient for achieving disintegration of the dosage form coupled with better dissolution and increased bioavailability. Sublingual tablets were found to have better characteristics when compared to conventional dosage forms. Sublingually administered tablets achieved better bioavailability, rapid

onset of action and better dissolution properties due to fast disintegration. The addition of superdisintegrants facilitated rapid disintegration and this approach can be used to treat acute disorders or emergency conditions. Sublingual tablets or any sublingual dosage form can be used to achieve a rapid onset of action, better patient compliance and increased bioavailability. The sublingual route of administration can be used for drugs which undergo extensive first pass metabolism or degradation in the GIT. Drugs administered sublingually tend to have better bioavailability which correlates to dose reduction when compared to conventional oral tablets.

## S4: AN OVERVIEW OF PHYTOCONSTITUENTS AND PHARMACOLOGICAL ACTIVITIES OF CELASTRUS PANICULATUS WILD

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**ABSTRACT**

Herbal drugs are traditionally used in various parts of the world to cure a number of ailments. Celastrus paniculatus Willd is one such herbal plant which has been employed extensively in the treatment of several health conditions in traditional system of medicine. The current review is an effort to summarize the information based on evidence regarding the botanical aspects, phytoconstituents, traditional uses and pharmacological actions of Celastrus paniculatus. The leaves have healing effect on injuries while the seeds show significant action on the Central nervous system. The studies on laboratory animals demonstrated various pharmacological actions showing excellent activities on the brain. Celastrus paniculatus is a versatile plant, as all its plant parts possess the potential to treat several diseases due to the presence of various phytoconstituents. However these constituents have to be further isolated and characterized to check its activity on other common pharmacological disorders.

## S5: LIPID NANOPARTICULATE SYSTEM OF SIMVASTATIN- A METHOD FOR SOLUBILITY ENHANCEMENT

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**ABSTRACT**

In the present work, solid lipid nanoparticles (SLNs) of simvastatin were formulated with an aim to increase the solubility, rate of dissolution and drug stability. The formulations were prepared by hot homogenization technique using lipids such as stearic acid, glycerol monostearate and tween 20 as a surfactant. The coarse emulsion was homogenized by using Polytron PT 1600 E homogenizer at 30000 rpm. Nanoparticles obtained were characterized for particle size analysis, zeta potential, SEM, DSC, FTIR and also analyzed for drug content and in vitro drug release profile. Out of 12 formulations, selected 5 formulations (F1 to F5) were found to be free flowing. The drug content of the selected formulations was ranging between 61.56 ± 1.02% to 78.34 ± 1.03%. The average particle size and zeta potential of selected formulas, F2 was found to be 795.7nm and -33.7mV and F4 was found to be 369nm and -34mV respectively. The comparative release profile of F1 to F5 was found to be in between 92.05 ± 0.004% to 97.65 ± 0.005% in comparison to pure drug profile of 72.00 ± 0.003% at 24hr release study. The DSC thermogram indicates the melting point of the drug was decreased from 140.95 $^{o}$C to 57.30 $^{o}$C, due to molecular dispersion of drug in lipids. Solid lipid nano-particles can be alternate stable cost effective approach for improving dissolution rate of poorly soluble drugs.

## S6: SOLID LIPID NANOPARTICLES- AN INNOVATIVE APPROACH FOR IMPROVING BIOAVAILABILITY AND THE SOLUBILITY

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**ABSTRACT**

The purpose of this study is to give a general review on solid lipid nanoparticles (SLNs) as a novel drug carrier for improving the solubility and bioavailability of drugs. Among the various colloidal drug carriers, SLNs have been emerged as next generation drug delivery system for incorporating lipophilic drugs. They are relatively nontoxic and nonirritant. The review insight on the various methods of preparation, characterization and also the application of SLNs for improving the solubility and bioavailability is explained here. SLNs is used as a novel carrier for improving the solubility of poorly soluble drugs which may results in enhanced bioavailability and stability of drug can also be improved by incorporating drug in the form of solid lipid nanoparticles. This review presents an overview of SLNs which includes SLN and its properties, excipients, techniques used in preparation of SLNs, characterization, and their applications.

## S7: FORMULATION AND EVALUATION OF TOPICAL SOLID LIPID NANOPARTICULATE SYSTEM OF CLOBETASOLE PROPIONATE

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### ABSTRACT

In the Present study Propionate (CP) Solid Lipid Nanoparticles (SLN) have been formulated, to increase drug stability and to improve skin retention properties. The nanoparticles were prepared using lipid extrusion method followed by high pressure homogenization at speed of 15000 rpm for 30 min. six formulations were prepared using variable ratio of the lipids, keeping rpm, time, concentration of surfactants, and active ingredient constant. Formulations were prepared using bees wax, carnauba wax, cetyl alcohol as oil phase, lecithin soya and tween 20 as emulsifying agent. The SLNs were characterized for visual appearance, drug content, particle size analysis, zeta potential, Scanning Electron Microscopy (SEM), Differential Scanning Calorimetry (DSC). Six formulations were subjected to in vitro release characteristics. The formulation F6 with highest drug content and encapsulation efficiency was incorporated into carbopol gel base. The particle size was ranged between 46.33-301.2 nm and zeta potential ranged between 18.5 mV-29.9 mV. The particle size was found to be increased with increase in the concentration and ratios of lipids. The ex vivo skin permeation studies on rat skin showed an appreciable increase in drug permeation in comparison to marketed formulation. The short term stability studies indicated no considerable change in drug content, loading and release profiles.

## S8: GENOTOXICITY: MECHANISMS, TESTING GUIDELINES AND METHODS

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### ABSTRACT

Genotoxicity is one of the major causes for cancer. Genotoxins are agents that can cause the damage of DNA or chromosomal structure thereby causing mutations. It can be chemical or radiation. This damage in the somatic cells will lead to various diseases ranging to cancer whereas the damage to the germ cell will lead to heritable diseases. Better identification and understanding of genotoxins would enable us to prevent the potential damage that can be caused by these genotoxic agents. In this article we discuss about the basic of genotoxicity and the importance of genotoxic studies.

## S9: A REVIEW ON ANALYTICAL QUALITY BY DESIGN

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### ABSTRACT

In present days, analytical method failure is becoming more common especially during method transfer as well as in quality control departments. It is presumed to be due to the exception given for robust test compliance by ICH Q2 guidelines. In current practices, chromatographic methods are more commonly employed as right analytics at all the stages during the product life cycle. In current practice, the implemented analytical methods were based on one factor at a time (OFAT), in which one parameter alone is optimized for the expected response whilst others remained constant. This practice always yielded a narrow robust behavior of the method for instrumental variables used in method development phase. Hence the present strategy of analytical method (i.e., OFAT) development has high risk in method failure and always requires revalidation protocol after method transfer or alternative method development; thereby it has been increasing the cost of the method. In order to eliminate the hiccups encountered during method development, the systematic QbD-based approach has slowly been permeating into the mind-set of analytical scientists. Accordingly, efforts have been made to extend QbD approach to analytical method development, popularly termed as “Analytical QbD (AQbD)”.The application of QbD concept to analytical method is justifiable, because of many variables that significantly affect the method results. These variables are such as instrument settings, sample characteristics, method parameters, and choice of calibration models. Being chromatographic technique is the most common analytical tool in pharmaceutical quality control, and the number of variables involved in analytical method development phase is almost equivalent to the number of variables involved in formulation and development protocols for dosage form. Implementation of QbD provides an opportunity to achieve regulatory flexibility but requires high degree of robustness, product quality, and analytical method understanding.

## S10: BASICS PRINCIPLES OF DESIGN OF EXPERIMENT

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### ABSTRACT

There are two essential agenda in experimental design, the first one design of experiment and later statistical analysis of data. The randomization, replication and blocking are three basic fundamentals in design of experiments. In Randomization, experimental runs and materials allotments are distributed randomly. Using random number generator the computer generate the random order for the design. In Replication, the mean of individualistic run of each combination are obtained. The replication determined the empirical error and can lead to obtain a more estimate of the parameter. One should not confuse the term of replication with repeated measurements. Suppose if u design an experiment by taking three factor the first two run have two identical factor and one factor are in different. This is called replication. But if you do same conditions of run for n number times it is called repeated measurements. The replication provides the differences between the runs and within the runs. In Blocking, mainly focused on elimination of disturbances factor and focused on the factors which has effect on method response. The experiments are conducted by keeping constant of nuisance factor and changing the prime factor.

## S11: A STUDY TO ASSESS KNOWLEDGE ON MEDICATION, ADHERENCE AND HEALTH RELATED QUALITY OF LIFE IN HYPERTENSIVE PATIENTS

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### ABSTRACT

To determine knowledge regarding hypertension, adherence to medication and Health Related Quality of Life (HRQoL), and their associations in hypertensive patients in Bangalore. A cross-sectional study was conducted among 250 hypertensive patients attending a tertiary health care public sector hospital in Bangalore, India. Data were collected using knowledge questionnaire regarding hypertension, Morisky Medication Adherence Scale, and EuroQol (EQ-5D) scale. The mean systolic and diastolic blood pressures of the 250 patients were 140.39 ± 15.485 and 88.74 ± 10.683 mmHg, respectively. The coefficient of correlation between knowledge regarding hypertension and adherence was 0.638 ($p < 0.001$), showing a positive association. The correlation coefficient between knowledge and HRQoL was 0.709 ($p < 0.001$), suggesting a good association. The correlation coefficient between adherence to medication and HRQoL was 0.545 ($p < 0.001$), which indicated a positive correlation. These results indicate that there are statistically significant associations between hypertension knowledge and HRQoL, hypertension knowledge and medication adherence, and between adherence and HRQoL in the hypertensive patients studied.

## S12: IMPACT OF PHARMACIST ASSISTED PATIENT COUNSELING FOR IMPROVING MEDICATION ADHERENCE AND QUALITY OF LIFE IN EPILEPTIC PATIENTS - AN EDUCATIONAL INTERVENTIONAL STUDY

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### ABSTRACT

To study the impact of Pharmacist assisted patient counseling for improving medication adherence and quality of life (QOL) in epileptic patients Methods: This study is a prospective observational study involving 120 patients with an age limit of 8-65 years and those taking Antiepileptic drugs for at least 3 months. The study population received patient counseling during their first visit. The impact of patient counseling on QOL and medication adherence was assessed using self-reported questionnaire QOLIE-31 and MMAS-8 between the first visit and the second visit. Statistical analysis (Paired t-test and Paired Chi-square test) was performed to analyze the impact of patient counseling on QOL and medication adherence in epileptic patients. Results: A total of 120 patients were included in the study. After providing patient counseling, it was observed that there was a statistically significant ($p<0.05$) improvement in all domains of QOLIE-31 and MMAS-8 scores. Before counseling, mean overall T-score of QOLIE-31 was 44.08Â±2.07which was changed to 49.14Â±1.27 after patient counseling with a mean change of 5.06 in overall T-score. In the case of medication adherence, before counseling 70% subjects were non adherent to therapy, after counseling it was reduced to 20%. The common reasons for medication adherence were forgetfulness, unawareness, therapy related, and economics related. Out of which forgetfulness along with

unawareness was the major one. The study described that patient counseling plays a major role in improving QOL and medication adherence.

## S13: UTILIZATION OF ANTIBIOTICS IN PATIENTS WITH URINARY TRACT INFECTIONS –A STUDY

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### ABSTRACT

The objective of this study was to assess and analyze the prescribing pattern, rationality of antibacterial, to study medication related problems and resistance/sensitivity patterns of antibiotics in patients with urinary tract infections. The observational prospective study was conducted in 100 patients with UTI at MVJ medical college and research hospital, Bangalore, India for six months. All required patient data were collected in specially designed case report form. Prescribing patterns, medication related problems and rationality were assessed. The average number of drug per encounter was 7.02. More than 63% of prescription had more than five drugs. Brand names of drug were prescribed more than the generic names. Fluroquinolones (norfloxacin) was mostly prescribed. Female population was more. Age group of >58 years old was most prevalent. Monotherapy of antibiotic was more than combination therapy. Most of the possible drug interactions were moderate type. Norfloxacin was most frequently interacting antibiotic. No significant medication errors were identified. Rationality was assessed to be rational. The most common type of pathogen was E.coli. Antibacterial prescribing patterns and rationality of the medications were appropriate but, using drug brand names can increase the chance of medication related problems. Higher number of comorbidities was leading to polypharmacy which can increase possibility of drug-drug interactions therefore there is an increased requirement for close monitoring and management of these possible interactions. E. coli, K. pneumoniae and P. aeruginosa were more sensitive to nitrofurantoin, amikacin and norfloxacin therefore these may be the antibiotics of choice for the treatment of community-acquired UTIs.

## S14: STUDY ON MEDICATIONS RELATED PROBLEMS IN PATIENTS WITH COPD

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### ABSTRACT

The objective of our study is to assess various medications related problems in patients suffering from COPD (Chronic Obstructive Pulmonary Disease). A prospective observational study was carried out on a total of 105 COPD patients in MVJ Medical College and Research Hospital for a period of six months. A total of 105 inpatients were enrolled in the study of which 81% were males and 19% were females. We could observe that 38.09% of enrolled patient were in the 60-70 age range and 73% of the patient were smokers. The majority (87.61%) of the patients were from low socio economic status, whereas 75.3% patients were having co-morbid condition. Type 2 diabetes mellitus was the most common Co morbid condition (28.57%) followed by Corpulmonale (20%) and Hypertension (18%). Antibiotics, Short Acting Beta 2 Agonist and Corticosteroids were the commonly prescribed monotherapies. 73% of the patients were prescribed with combination therapy and commonly prescribed combinations were short acting Beta 2 agonist, short acting anticholinergic and inhaled corticosteroids. We could identify a total of 424 medication related problems. The commonly found medication related problem were Drug-Drug Interaction (29.24%), Polypharmacy (24.76%), Drug Duplication (16..98%) Adverse drug reactions (10.40%) and in prescriptions we could identify Spelling Mistakes (3.77%), incomplete data (10.6%), Illegible data (3.30%) and Frequency error (0.47%) as well. Polypharmacy, Drug-drug interactions, Adverse Drug Reactions and Drug Duplications were the commonly identified medications related problems in COPD patients.

## S15: STUDY ON PRESCRIBING PATTERN OF PROTON PUMP INHIBITORS

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### ABSTRACT

Proton pump inhibitors (PPIs) are still widely used despite increasing reports of their adverse events. This drug use evaluation study was conducted to assess the prescribing

pattern of PPIs for patients admitted to the MVJ Hospital, Bangalore. An observational, retrospective, patients' chart-based study included all patients who received a PPI in between April 1, 2017, and October 1, 2017. A standardized tool was prepared and reviewed by the involved clinical pharmacists to collect appropriate data for the evaluation. Statistical analysis was performed using the 25th Version of the Statistical Package of the Social Sciences (SPSS®). A total of 120 patients received PPIs during the audit period, of which omeprazole was the most frequently prescribed (35%). Majority of the patients (85%) were started on PPI without further investigations for confirming the indication, and the indication was not documented in 70% of the participants. Nonsteroidal anti-inflammatory drugs were the most commonly co-prescribed medications with PPIs (60%). Pantoprazole was co-prescribed with clopidogrel in 45% of the patients. This drug utilization study shows the need for a proper prescribing practice considering a clear indication and recommendations about the duration of therapy and the need for reassessment.

## S16: STUDY OF DRUG INDUCED EXTRAPYRAMIDAL SYMPTOMS AND WEIGHT GAIN AMONG PSYCHOTIC PATIENTS ON TREATMENT

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### ABSTRACT

Antipsychotic-induced weight gain is a major management problem for clinicians. It has been shown that weight gain and obesity lead to increased cardiovascular and cerebrovascular morbidity and mortality, reduced quality of life and poor drug compliance. This narrative review discusses the propensity of various antipsychotics to cause weight gain, the pharmacologic and non-pharmacologic interventions available to counteract this effect and its impact on adherence. Most antipsychotics cause weight gain. The risk appears to be highest with olanzapine and clozapine. Weight increases rapidly in the initial period after starting antipsychotics. Patients continue to gain weight in the long term. Children appear to be particularly vulnerable to antipsychotic-induced weight gain. Tailoring antipsychotics according to the needs of the individual and close monitoring of weight and other metabolic parameters are the best preventive strategies at the outset. Switching to an agent with lesser tendency to cause weight gain is an option, but carries the risk of relapse of the illness. Non pharmacologic interventions of dietary counseling, exercise programs and cognitive and behavioral strategies appear to be equally effective in individual and group therapy formats. Both non pharmacologic prevention and intervention strategies have shown modest effects on weight. Multiple compounds have been investigated as add-on medications to cause weight loss. Metformin has the best evidence in this respect. Burden of side effects needs to be considered when prescribing weight loss medications. There is no strong evidence to recommend routine prescription of add-on medication for weight reduction. Heterogeneity of study methodologies and other confounders such as lifestyle, genetic and illness factors make interpretation of data difficult.

## S17: FORMULATION AND COMPARATIVE IN-VITRO EVALUATION OF FAST DISINTEGRATING MOUTH FILMS OF BETAXOLOL HYDROCHLORIDE FOR HYPERTENSION

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### ABSTRACT

The present study is aimed at preparing a fast disintegrating oral film of Betaxolol Hydrochloride for the treatment of hypertension using solvent casting method. In the formulation of fast disintegrating mouth films, various trials have been carried out using two grades of HPMC (E15 and E50) as film forming polymer, PEG-4000 as plasticizer, citric acid as saliva stimulating agent, peppermint oil as flavoring agent and sucrose as sweetener. The prepared films were evaluated for film thickness, folding endurance, surface pH, morphological properties, %drug content, tensile strength, In vitro disintegration time and In vitro dissolution studies. The formulation F8 prepared by using HPMC E50 as polymer and PEG-4000 as plasticizer shows the best result with minimum disintegration time of 45.78±0.521, % drug content of 99.03±0.276%, and 96.19±0.51% CDR within 10 minutes, with satisfactory physiological properties. The result of FT-IR showed that there is no incompatibility found between the drug and the excipients used in the formulations. This suggests that fast disintegrating mouth films of Betaxolol Hydrochloride could be potentially a useful formulation for the treatment of hypertension where quick onset of action is desired.

## S18: A STUDY ON ASSESSMENT OF RISK FACTOR RESPONSIBLE FOR DEVELOPING POLYCYSTIC OVARIAN SYNDROME, CREATING AWARENESS AND LIMITING THE RISK FACTOR BY ADVANCED PATIENT COUNSELLING

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### ABSTRACT

To assess the risk factors in developing poly cystic ovarian syndrome (PCOS), creating awareness and limiting them by advanced patient counseling. An institutional and community based randomized observational study was conducted in RR institutions and general public over a period of six months. 200 participants who met the inclusion criteria were included in the study. The data was collected using self-designed questionnaire and suitable statistical analysis was done. Self-made PCOS score was used to access the severity. Out of 200 participants included in the study, majority (22.5%) of the participants belonged to age group of ≥ 25 years. On analysis of PCOS state it was found that 110 participants (55%) were with the chance for getting PCOS (score 5-9), 64 participants (32%) were with High risk of PCOS (score ≥ 10) and 26 participants (13%) were unpredictable to PCOS (score < 5).Among 64 participants with High risk of getting PCOS, majority (17) of the participants were at the age of ≥ 25 years. Among 110 participants with Chance of getting PCOS, majority (20) of the participants were at the age of 21 years and among 26 participants with Unpredictable to PCOS, most of the participants were at the age of 19 years .Out of 200 participants 25 participants were found with complications. Among them Infertility problems (52%) was found to be the major one. The risk of PCOS increases with presence of one or more identified predisposing factors. Most of the factors tested as predisposing factors in our study are interlinked to each other and are mostly modifiable. Hence careful monitoring and proper management of identified predisposing factors not only delays but also helpful in adequate management of the disease.

## S19: STUDY OF RATIONAL DRUG PRESCRIBING PATTERN FOR RESPIRATORY TRACT INFECTION IN PEDIATRICS IN TERTIARY CARE HOSPITAL

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### ABSTRACT

In developing countries Respiratory tract infections are the major cause of morbidity and mortality in pediatric population. There is polypharmacy, overuse and also inappropriate use of antibiotics without culture sensitivity test worldwide. The present study was conducted to study the rational prescribing pattern of respiratory tract infections. To evaluate the prescribing pattern of drugs in respiratory tract infection in pediatrics. This retrospective study was conducted for a period of six months in a hospital for pediatric inpatients. Results: A total of 150 cases were studied. Male 96(64%),Female 54(36%).Age wise distribution was done 0-30 days 3(2%), 1-12 months38 (25.3%), 1-14 years 109(73%).Out of 150 cases the most commonly prescribed category of drugs was antibiotics(19.06%). In this study, the highly prescribed category of antibiotics were penicillins 106 (38.12%), followed by betalactum antibiotics 101 (36.33%).In our study it was observed that 21.05% of the cases were treated with single antibiotic therapy, 60.9% of the cases were treated with 2 drug antibiotic therapy.15.7% of the cases were treated with 3 drug combination of antibiotics and 2.25% cases were treated with four drug combination of antibiotics. In above study the prescription pattern of antibiotics is not rational as there is polypharmacy, over use and also inappropriate use of antibiotics without culture sensitivity test. There is a need of educational programmes in order to bring up the rational use of antibiotics and make prescribers to follow standard antibiotic prescribing guidelines for Respiratory tract infections.

## S20: PHYTOCHEMICAL SCREENING AND IN VITRO ANTIOXIDANT ACTIVITY OF ETHANOLIC LEAF EXTRACT OF AQUILARIA MALACCENSIS LEAVES

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**ABSTRACT**

The aim of present study was to screen the phytoconstituents and to investigate in vitro antioxidant potential of ethanolic leaf extract of the plant Aquilaria malaccensis (Thymelaeaceae). The antioxidant activity was assessed by in-vitro methods using DPPH assay, Hydroxyl radical Scavenging assay, Superoxide radical scavenging assay method. And the plant extract shows significant antioxidant property. Preliminary phytochemical investigations were also performed on the leaves of Aquilaria malaccensis which shows the presence of saponins, alkaloids, flavonoids, terpenoids, tannins, carbohydrate, glycosides, coumarin, emodins, anthraquinones, resins, phenols.

## S21: ASSESSMENT OF PRESCRIBING PATTERN OF CHEMOTHERAPY DRUGS AND MONITORING OF ADVERSE DRUG REACTION IN CANCER PATIENTS

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**ABSTRACT**

Cancer is one of the leading causes of death worldwide with estimated 12% deaths annually. By evaluating and comparing the prevailing pattern with the existing standards, necessary steps should be taken to optimize the drug therapy. Hence, our study was conducted with the aim to observe and evaluate the prescribing trends of anticancer drugs and possible avenues for improving cancer management. Primary objectives are; to evaluate the prescribing pattern of chemotherapy drugs and to monitor adverse drug reaction in the cancer patients receiving chemotherapy. The study was conducted for a period of six months. A hospital based retrospective and prospective observational study. Sources of data and materials are including Patient case sheet, Laboratory data reports, Medication/treatment chart, Hospital Database, Suitable design documentation form. Patients diagnosed with cancer and receiving treatment in outpatient and inpatient oncology department during study period irrespective of age, sex, diagnosis, and treatment were considered for inclusion. Out of 260 patients included in the study, 60% were females and 40% were males. The majority of patients were from IP department and the age group between 41-50 years. In this study anticancer prescription in chemotherapy, was not rational as there is polypharmacy, overuse and inappropriate use.

## S22: ANTI-HEPATOTOXIC AND ANTIOXIDANT ACTIVITY OF LIMNANTHEMUM INDICUM AGAINST CARBON TETRACHLORIDE INDUCED LIVER TOXICITY IN RATS

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**ABSTRACT**

Whole plant of Limnanthemum indicum (Menyanthaceae) is traditionally used for liver disorders. Limnanthemum indicum was investigated for its Anti-hepatotoxic and Antioxidant activity. Alcoholic extract of whole plant of Limnanthemum indicum (100, 200, 400 mg/kg, p.o.) was evaluated for its Anti-hepatotoxic and Antioxidant activity in Carbon tetrachloride (CCl4)-induced liver toxicity in Rats. The Anti-hepatotoxic activity was assessed from biochemical and histopathological studies. The administration of CCl4 in rats induced hepatotoxicity which was evidenced by increased levels of Aspartate aminotransferase, Alanine aminotransferase, Alkaline phosphatase and total bilirubin and oxidative stress. Pretreatment with Limnanthemum indicum extract significantly protected the liver in Carbon tetrachloride administered rats. Limnanthemum indicum extract significantly elevated antioxidant enzymes like superoxide dismutase, catalase, glutathione, Glutathione peroxidase, Gamma glutamyl Transferase and Glutathione-S-Transferase and decreased lipid peroxidation levels in liver. Histological studies showed that Limnanthemum indicum at 400 mg/kg reduced the hepatocellular damage in CCl4 treated Rats. Thus the alcoholic extract of Limnanthemum indicum shows good antihepatoxic and antioxidant activity.

## S23: INFLUENCE OF DEMOGRAPHIC LOCATION AND SOLVENT EXTRACTION ON PHARMACOGNOSTICAL ASSESSMENT AND IDENTIFICATION OF CONESSINE CONTENT IN DIFFERENT PARTS OF HOLARRHENA ANTIDYSENTRICA THROUGH HPTLC ANALYSIS

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**ABSTRACT**

The present study is aimed at comparative pharmacognostical studies in terms of macroscopic and quantitative microscopy on different solvent (chloroform, methanol and water) extracted leaves, stem and root parts of HA, procured from the Bangalore soil zone, Karnataka, India. Initially the soil parameters are checked for the presence of various metals and other physicochemical properties. Microscopy and macroscopic analysis were performed to under the arrangement of anatomical structures of cells and tissues. Thereafter HPTLC study was performed to determine the presence of conessine in various parts of Kurchi. The results revealed the soil is sandy loam with the pH of 7.40, organic carbon content 0.30%, electrical conductivity (EC) was 13.14 mS cm-1 and the soil redox potential was 17.80 mV. Macroscopically and microscopical evaluation of leaf, stem and root gave special identification characters. Phytochemical investigation reveals the presence of alkaloids, carbohydrate, protein, glycoside, saponin, phytosterols and diterpenes. Thereafter, presence of conessine was identified by HPTLC at 192 nm using mobile phase Toluene, Ethylacetate and Dietylamine (6:3:1) and percentage of conessine resulted higher of 0.51 in methanol bark extract followed by 0.48% in the methanol root extract. This may be due to the soil nature of Bangalore zone and the effect of solvent where the active constituents are soluble maximized to get more yield. Pharmacognostical parameters and conessine content in different parts of Holarrhenaantidysentrica through HPTLC was revealed that was dependent on various factors

## S24: EVALUATION OF ANTHELMINTIC ACTIVITY OF CITRUS RETICULATA: IN VITRO AND ITS PHYTOCHEMICAL INVESTIGATION

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**ABSTRACT**

The prevalence of worm infestation is high in underdeveloped and developing countries due to poor sanitation and lack of health education. Citrus reticulata, fruit belonging to citrus family Rutaceae is a common fruit native to Asia. Peels of the fruit are rich in limonene, a potent phytoconstituent having anthelmintic activity. However, proper utilization of peels has not been done as it is not consumed and is therefore discarded. The main objective of the study was to explore various phytoconstituents present in C. reticulata and its anthelmintic effect. Various concentration of methanolic extract and volatile oil of C. reticulata were subjected for assessment of anthelmintic activity in earthworms. Time of paralysis and time of death were used as an evaluation parameter. Albendazole (25 mg/ml) was used as a standard drug. Phytochemical test revealed the presence of alkaloids, carbohydrates, tannins, flavonoids, terpenoids, and glycosides. Concentration dependent anthelmintic effect was observed with the extract were 150 mg/ml concentration of methanolic extract showed paralysis of test worm (earthworm) at 5.76 minutes and death at 19.16 minutes, respectively. C. reticulata peel has shown substantial anthelmintic activity using in vitro model on earthworms. Hence, further research is required to understand its mechanism of action using in vivo models to confirm its anthelmintic potential.

## S25: COMPARATIVE PROXIMATE ANALYSIS, PHYTOCHEMICAL SCREENING AND ANTIOXIDANTSTUDY OF LEAF AND ROOT EXTRACTS OF DECALEPIS HAMILTONII WIGHT & ARN.

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**ABSTRACT**

Decalepishamiltonii Wight & Arn. (DH, family: Asclepiadaceae) is an endemic and endangered plant in India. The plant is commonly known as Swallow root and rarely located in Bangalore, Karnataka. The present study was revealed to establish proximate analysis, phytochemical

screening and antioxidant activity on leaves and root methanolic extract of the domesticated DH plant. Moisture content and ash content was estimated for both leaves and roots and gave higher values for leaves (7.4 % and 6.7 %, respectively) than roots. Thereafter, various elements such as Fe, Cu, Zn, Cd, Cr, Pb, Ni, As, K, P, Ca and Na were estimated and revealed absent of nonessential heavy metals (Cd, Cr, Ni, Pb, As) in leaves whereas below detectable limits of the same was detected for root sample. Various chemical tests for leaves and roots were carried out and revealed presence of flavonoids, tannins, glycosides, steroids, terpenoids, carbohydrate and phenols. Furthermore, total phenolic, total flavonoids content was resulted higher for leaves extracts and the same trend followed for antioxidant activity when IC50 values were compared with standard ascorbic acid and roots extract. Finally concluded that leaves extract had powerful antioxidant properties than roots extracts and the activity was dose dependent manner.

## S26: EFFECT OF DEMOGRAPHIC LOCATION ON PHLEBODIUM DECUMANUM (WILLD.) J. SM. FOR ITS PHYTOCONSTITUENTS AND ESTABLISHMENT OF ANTIOXIDANT AND NOVEL ANTHELMINTIC ACTIVITY OF ITS AQUEOUS AND METHANOLIC LEAF EXTRACTS

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### ABSTRACT

A fern, Phlebodiumdecumanum (Willd.) J. Sm. (PD) belongs to the family Polypodiaceae. It is a creeping, densely hairy or scaly rhizome bearing fronds at intervals along its length. It is native to tropical and subtropical regions of the America. The present study was investigated to establish the presence of phytoconstituents in leaf samples collected from three different geographical zones (Bengaluru, Nasik, and Munnar) and their impact on antioxidant and anthelmintic activity. Aqueous and methanol leaf extracts were used as solvent for extraction (conventional Soxhlet method) and results were compared to established novel application of fern species. Results revealed presence of alkaloids, polyphenols, terpenoids, flavonoids, etc., upon various chemical tests. Thereafter, antioxidant study was established with DPPH and FRAP assay method. The IC50 value for methanol extract showed higher (210.24 µg/ml) for Munnar sample than the other two samples. An anthelmintic activity was determined by compared with Albendazole standard (25 mg/ml). Results revealed significant anthelmintic activity.

## S27: A REVIEW: SOLID DISPERSION, A TECHNIQUE OF SOLUBILITY ENHANCEMENT

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### ABSTRACT

The aim of the study was to explore the necessity, advantages and different techniques of solid dispersion for enhancing solubility of poorly soluble drugs. Different types of solid dispersion have been explained briefly along with the various techniques of solid dispersion in detail. Solid dispersions of poorly soluble drugs have been found to give positive results in enhancing its solubility and dissolution characters. Solid dispersion techniques improve solubility and bioavailability of poorly soluble drugs. Solid dispersions can be incorporated into various dosage forms with wide range of applicability.

## S28: EFFECT OF CULTURAL CONDITION ON ELEMENT CONTENTS IN RAW MATERIAL VIS-A-VIS IMPACT OF SOLVENT NATURE ON ESTIMATION OF PHYTOCHEMICALS AND SCREENING OF ANTHELMINTIC ACTIVITY OF MELIA DUBIA CAV. LEAF

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### ABSTRACT

A comparative study was conducted to reveal the anthelmintic activity potential of aqueous and methanol leaves extracts of Melia dubia Cav. (MDC), collected from four different demographical locations of India, viz., West Bengal, Karnataka, Kerala and Tamil Nadu. Preliminary soil nature was analyzed as per the standard methods and elemental analysis for raw leaf samples was carried out by atomic absorption spectrophotometer which revealed safety

use of raw materials for further study. Thereafter, preliminary phytochemical screening of aqueous leaf extracts (collected from all the zones) showed the presence of flavonoids, glycoside, alkaloids, phenols, carbohydrates whereas alkaloids, phenols, flavonoids, steroids, tannins, carbohydrate and proteins are present in methanol leaf extracts. Based on the results, total phenolic and total tannin contents were estimated by Folin-ciocalteu method where gallic acid was used as standard. Chloride colorimetric method was applied for total alkaloid content where atropine used as a standard. The result showed increased in total phenol and total tannins content (102.13 ± 0.01 mg and 64.24 ± 0.13 mg of gallic acid equivalents, respectively) and alkaloids content (82.71 ± 0.12 as mg of atropine equivalents) in methanol leaf extract collected from West Bengal zone (soil pH 6.32 ± 0.01), followed by Kerala zone (99.26± 0.01 mg for phenolics content, 58.36 ± 0.01 mg for tannin and 78.86 ± 0.01 mg for total alkaloids) where soil was pH 6.48 ± 0.11. Furthermore, the anthelmintic activity was carried out against Pheretimaposthuma (Earthworms) at varied concentrations of 25, 50, 100 and 150 mg/ml and compared with standard albendazole (25 and 50 mg/ml) and distilled water as control. Both the extracts exhibited concentration dependent paralytic effect, followed by death on the test organism. Among the zones, methanol and aqueous extracts from West Bengal zone showed highest paralytic activity against the test organism (paralysis at 6.47 and 10.3 min, followed by death at 9.42 and 16.27 min, respectively at 150 mg/ml) and the effects may be due to high content of phenolics, tannins and alkaloids in methanol leaf extract of MDC. Finally concluded that MDC leaf has powerful anthelmintic activity and proved as a novel source of antiparasitic drug.

## S29: ECONOMICAL NOVEL FORMULATION AND EVALUATION OF HERBAL OILS FOR MOSQUITO AND HOUSEFLY REPELLENT ACTIVITIES

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### ABSTRACT

Aromatic plants contain compounds that they use in preventing attack from phytophagous insects with the multiple mechanisms like repellents, feeding deterrents, toxins, and growth regulators etc. Looking at that the present study was carried out with the aim of mosquito and house fly repellent activities with the novel herbal oil formulations. The oils of patchouli, eucalyptus, rosemary, citronella and neem leaves were extracted by hydro distillation method using Clevenger apparatus and various formulations were prepared, viz., tincture, candle and crystal cake. Tincture was evaluated by sprayed in known mosquito larvae and observed for death rate using acetone as control; candle was evaluated on flammability, burning time as well as mosquito and insect repellency test. Furthermore crystal cake formulation was evaluated on appearance, volatility time, stability of fragrance, mosquito and insect repellency test. All the formulations showed remarkable significant dual activities against mosquito and insect population. Based on these preliminary actions, all these formulations were tested in Varthur locality (30 houses and 20 chicken shops) for one month where mosquito and insect populations were more and resulted significant elimination of both the populations. This result may be due to the presence of the active constituents like volatile alcohol, ketone and other constituents in the oils. The result revealed the formulated tincture spray and candle were more effective than crystal cake in relation to killing mosquitoes, insects, stability of fragrance, etc.

## S30: INFLUENCE OF METALS IN SOIL ON THE COMPARATIVE PHYTO CHEMICAL CHARACTERIZATION AND ANTIOXIDANT STUDY OF INDIAN GOLDEN SHOWER (CASSIA FISTULA)

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### ABSTRACT

This paper highlighted the effect of selected soil containing metals, viz. Cd, Cr, Cu, Fe, Ni, Pb and Zn on the biochemical compositions and antioxidant activity in leaf of 20 years old two Cassia fistula L. (CF) cultivars. The leaf samples were collected from CF grown on road sides from the states of Maharashtra and Karnataka in India. Antioxidant activity and total phenol contents from methanolic and aqueous leaf extract were evaluated by assays like oxygen radical absorbance capacities (ORAC), 2, 2/-Azino-bis (3-ethylbenzothiozoline-6-sulphonic acid) diammonium salt (ABTS) and folin- ciocalteu reagent methods respectively. Maximum dose dependent antioxidant activity was observed in methanol leaf extract of both the cultivars, but marginal variation observed in antioxidant activity. The result revealed that total phenolic content was maximum in the methanolic leaf extract (11.40 ± 0.37 mg g−1 of gallic acid equivalent). A positive correlation between antioxidant activity and total phenol compounds was noticed from both the samples. Furthermore a significant correlation was observed between element contents and antioxidant activities. This was may be due to elements like Fe, Cu, and Zn for accumulation of secondary constituents in the methanolic leaf extract that are major contributors to the antioxidant potential of CF. There

were no other heavy metals (Ni, Cd, Pb and Cr) reported in both the samples.

## S31: FORMULATION AND EVALUATION OF MUCOADHESIVE BUCCAL TABLET OF ANTIANGINAL DRUG

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### ABSTRACT

The main objective of the study is to develop and evaluate the mucoadhesive buccal tablets of antianginal drug, Trimetazidine hydrochloride by wet granulation method using various polymer to avoid the first-pass metabolism, to reduce dosing frequency and to improve patient compliance with improved bioavailability. In this study, 11 formulations were prepared by wet granulation method using different polymers at varying ratios. Polyvinyl Pyrrolidone K30 used as granulating agent and lactose as diluent. Two different grades of Hypromellose (hydrophilic polymer) such as HPMC K100M, HPMC E5LV and sodium CMC (mucoadhesive polymer) were used for the formulation of Trimetazidine hydrochloride buccal tablet. The prepared mucoadhesive buccal tablets were evaluated for physicochemical parameters such as hardness, thickness, friability, weight variation, surface pH and content uniformity studies. The prepared buccal tablets were also evaluated for mucoadhesive strength, ex vivo residence time, in vitro drug release and drug permeation through the porcine buccal mucosa. The drug excipients compatibility was evaluated by FTIR studies. Ex vivo mucoadhesive strength, ex vivo residence time and in vitro release studies showed that formulation F7 showed satisfactory bio adhesion (0.25 N) and exhibited optimum drug release (94.25 % after 6hrs). The swelling index of formulation F7 was found to be 100%. The in vitro release kinetics studies revealed that all formulation fits well with first order kinetics followed by Korsmeyer-peppas model and the mechanism of drug release is Fickian diffusion. Based on results of ex vivo mucoadhesive strength, swelling index and drug release studies formulation F7 was selected as optimized formulation and subjected for stability study. It was confirmed from stability studies that the optimized formulation remained stable at 40˚c and 75% relative humidity.