*ISSN 2321-0125*
Journal of Pharmaceutical and BioSciences
JPBS
An International Journal
www.jpbs-online.com

## RV1: Implementation Of Qbd To Analytical Method Development

Nayana Narawade[1], Jyotsna Jadhav[2]
*[1]M. Pharm. (Pharmaceutical Chemistry), [2]M. Pharm. (Quality Assurance Technique), M.V.P's College of Pharmacy, Nashik.*

Recent pharmaceutical regulatory documents have stressed the critical importance of applying quality by design (QbD) principles for in-depth process understanding to ensure that product quality is built in by design. QbD tools, for example risk assessment and design of experiments, enable enhanced quality to be integrated into the analytical method, enabling earlier understanding and identification of variables affecting method performance. The different ways several authors have treated single QbD steps of method development are reviewed and compared. Since the adoption of the ICH Q8 document concerning the development of pharmaceutical processes following a Quality by Design (QbD) approach, there have been many discussions on the opportunity for analytical method developments to follow a similar approach. As per the FDA, implementing the Quality by Design (QbD) approach for the analysis of commercially available mixtures is hypothesized to enhance the pharmaceutical industry via facilitating the process of analytical method development and approval.

**Keywords:** QbD, Design of Experiment, Design Space, Process Analytical Technology (PAT), Analytical Target Profile (ATP)

## RV2: Implementation Of Quality By Design (Qbd) Paradigm For Pharmaceutical Development

Kare Pallavi, Bhusare Snehal
*Department of Pharmaceutics, MVP's College Of Pharmacy, Gangapur Road, Nashik, 422002.*

Quality by Design (QbD) is the concept of continuous gaining of relevant knowledge based on scientific principles and the information gained from pharmaceutical development and manufacturing experiences which implement into designing quality product. The concept promotes industry's understanding of the product and manufacturing process starting with product development, basically building quality in, not testing it. QbD provides higher level of assurance of product quality, cost saving and efficiency for industry and more efficient regulatory oversight. QbD provides continued assurance of quality throughout product lifecycle, throughout product supply chain. Under this concept of QbD during designing and development of a product, a company needs to define desire product performance profile [Target product Profile (TPP), Target Product Quality Profile (TPQP)] and identify critical quality attributed (CQA).On the basis of the information, one can design the product formulation and process to meet the product attributes. This leads to understand the impact of raw materials [critical material attributes (CMA)], critical process parameters (CPP) on the CQAs and identification and control sources of variability. The foundation of Quality by Design is ICH Guidelines Q8 for pharmaceutical development, Q9 for quality risk management, Q10 for pharmaceutical quality systems.

**Keywords:** Quality by Design, Target Product Quality Profile, Target product Profile, Critical quality attributed.

## RV3: Supergenerics: The New Perspective of Innovation

Bhor Neha Jalindra[1], Patil Sumedha Ramchandra[2]

*[1]Department of Pharmaceutics [2]Department of Pharmaceutical Chemistry, MVP's College Of Pharmacy, Gangapur Road, Nashik, 422002.*

The declining R&D efficiency of the pharmaceutical industry is becoming the bottleneck for innovation and future growth across the entire pharmaceutical industry. Discovery and development program comes at a high risk and requires substantial financial resources. In contrast to this, the generic industry picks up these molecules after patent expiration to develop an exact copy of originator drug product. Near-term generics sales are projected to grow two to three times faster than the overall pharmaceutical market as patented drugs are on verge of expiration, but yet the growth for generics may be inevitable. The change in the demographic composition as well as the growing demand from the pharmerging markets will create a substantial need for individualized therapeutic solutions that could be addressed by developing patient centered pharmaceutical products through "Supergeneric" route. Supergenerics or "Improved therapeutic entities" is for innovation in drug therapy in the coming decades. Supergenerics are small molecule drug products that are neither new chemical entities, nor traditional generics; instead they are in between, claiming to be improved versions of existing drugs. Supergenerics help provide opportunities in addressing unmet medical needs and cost-effective solutions for product development in emerging markets. **Keywords:** supergenerics, innovation,Pharmaceutical industry

## RV4: Recent Advances In Pharmacy : Six Sigma Approach

Jyotsna Balasaheb Jadhav

*Department of Quality Assurance Techniques, M.V.P. Samaj's College of Pharmacy, Gangapur road, Nashik-422002, Maharashtra.*

We provide an introductory overview of the Six Sigma development and improvement processes. A historical perspective is provided. Six sigma is a statistical concept which helps us to define the problems systematically, provides tools to measure and analyze the influencing factors, identifies the improvements that can be implemented easily and ensure that the changes which have been made, are kept alive through a controlled process and maintains the gains over the time. Six Sigma has been utilized by manufacturing industries to decrease costs and improve quality and productivity by reducing variation and production defects. To achieve six sigma quality, a process must produce no more than 3.4 defects per million opportunities if the output is normally distributed.There are two six-sigma sub methods namely DMAIC and DMADV. Enhancing the quality and operational aspect of the manufacturing process is key, and thus, many companies are integrating traditional six sigma. Six sigma as a problem solving approach has been used in various fields to provide the fundamentals of variation management and reduction in order to assist in transforming established methodologies into new and efficient techniques.

**Key words:** Six sigma, Sigma level, DMAIC, DMADV, Training

## RV5: Resolution Of Racemic Mixture

Gorade S. R, Kumbhare M. R.

*Dept. of Pharm. Chemistry, S.M.B.T. College Of Pharmacy, Dhamangaon, Nasik.*

Pasteur was only 26 years old at the time and was unknown in scientific circles. He was concerned about the accuracy of his observations because a few years earlier, the well-known German organic chemist Eilhardt Mitscherlich had reported that crystals of the same salt were all identical. Pasteur immediately reported his findings to Jean-Baptiste Biot and repeated the experiment with Biot present. Biot was convinced that Pasteur had successfully separated the enantiomers of sodium ammonium tartrate. Pasteur's experiment also created a new chemical term. Tartaric acid is obtained from grapes, so it was also called racemic acid (racemus is Latin for "a bunch of grapes"). When Pasteur found that tartaric acid was actually a mixture of enantiomers, he called it a "racemic mixture." Separation of enantiomers is called the resolution of a racemic mixture Preparation of enantiopure compounds is one of the most important aims both for industrial practice and research. The results of these crystallizations (recrystallizations) of mixtures of chiral compounds differ from those observed at the chiral compounds. Expectedly, not only the stereoisomer in excess can be crystallized, because the mixture of enantiomers. Methods of separation of a racemic mixture in to dextro and levo components are: 1 Mechanical Separation 2. Biochemical Separation 3 Salt Formation.

**Keywords:** Racemic mixture, enantiomers, Pasteur

## RV6: Molecular Docking

Sonali Shinde, Sachin Bhosale

*S. M. B. T. College of Pharmacy, Dhamangaon.Nashik.*

Docking is another approach of rational drug design i.e. structure based drug design in which protein structure is known and drug molecules are designed and are checked and determined whether it can be used as drug or not .Docking is program tool used to predict how small molecules or drug is fit into receptor site of known 3Dstructure of protein. Computation docking always require two component ,which may be briefly be characterize are" scoring or searching " refers to that fact any docking method accessible for the interaction between to molecules .The goal is to find the orientation and conformation of molecules. Scoring refers to the fact that any docking procedure must evaluated and rank configuration generated by the search process. The various application of docking are like HIV transcriptase inhibitor Captopril, Nelfinavir. **Keywords:** CADD, Docking

## RV7: Mouth Dissolving Tablets

Reena Ashok Patel, Saptarshi Dutta.

*S. M. B. T. College of Pharmacy, Dhamangaon, Tal- Igatpuri, Nasik 422403.*

In recent decades, a variety of pharmaceutical research has been conducted to develop new dosage forms. One of this is the rapid disintegrating tablet (RDT). The development of Fast- or mouth dissolving tablets have been formulated for pediatric, geriatric, and bedridden patients and for active patients who are busy and traveling and may not have access to water and for elderly persons who have difficulties in taking conventional oral dosage forms (viz. solutions, suspensions, tablets, and capsules) because of hand

tremors and dysphagia. Other groups include the mentally ill, the developmentally disabled, and patients who are uncooperative, on reduced liquid-intake plans, or are nauseated. In some cases such as motion sickness, sudden episodes of allergic attack or coughing, and an unavailability of water, swallowing conventional tablets may be difficult. This review summarizes the formulation methods and recent drug formulation in mouth dissolving tablets. **Keywords:** melting, fast dissolving tablets, evaluation.

## RV8: Nutraceuticals Drug Interactions

Karan A. Shirsat, Pratik R. Habde, Ajaykumar R. Surana

*S.M.B.T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist- Nashik, M.S. 422403.*

Nutraceuticals are substance which can be considered a food or its part which, in addition to its nutritional value provides health benefits including prevention of disease. Nutraceuticals has evolved from link between diet and health. They are also known as functional foods. A drug interaction is defined as any modification caused by another exogenous chemical (drug, herb or food) in the diagnostic, therapeutic or other action of a drug in or on the body or a situation in which a substance affects the activity of a drug. Nutraceuticals are nowadays widely used throughout the world as they are affordable, easily available and also provide therapeutic benefits. But apart from their widespread benefits they can also cause certain drug interactions and toxicity. This project aims at shining light on Nutraceuticals, their advantages along with their interactions and toxicity with drugs. The purpose of this project is to create awareness among people about the same. Likewise people may not know that garlic (nutraceutical) which reduces platelet aggregation, hyperlipidemia and has vasodilatory effect can interact with many drugs like Aspirin, Warfarin, Contraceptives. Like garlic other Nutraceuticals (Ginger, Liquorice, onion, papaya, mentha) also interact with drugs. **Keywords:** Nutraceuticals, Drug interactions, functional foods, garlic

## RV9: Review on Recent Advances In Polymorphism

Aher Supriya M, Dighe Pravin R

*S.M.B.T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist- Nasik, M.S. 422403.*

Some substances exist in more than one crystalline form known as polymorphic atoms and the phenomenon is known as ‘Polymorphism’. Many Pharmaceutical solids can exist in different physical forms / Polymorphs. Polymorphism is often characterized as the ability of a drug substance to exist as two or more crystalline forms that have different arrangements and/or confirmations of the molecules in the crystal lattice. Polymorphism refers to the occurrence of different crystalline forms of the same drug substance. Polymorphs have different stabilities and may simultaneously form at the temperature to a stable form depending upon its solubility, hygroscopicity, flow ability and stability .Polymorphism study can be performed by DSC, XRD and SEM. Differential Scanning Calorimetry (DSC) is an experimental technique for measuring the energy necessary to establish a nearly-zero temperature difference between a test substance (and/or its reaction products) and an inert reference material, while the two samples are subjected to an identical (heating, cooling or constant) temperature programme. XRD is widely used to determine the degree of crystallinity of pharmaceuticals. A scanning electron microscope (SEM) is a type of electron microscope that produces images of a sample by scanning it with a focused beam of electrons. **Key words:** Polymorphism, Differential Scanning Calorimetry, X-ray diffraction, Scanning Electron Microscope.

## RV10:Advances In UPLC Technique & Future Perspective

Dipak Ranwade, Prasad P. Dahivelkar

*S.M.B.T. College of Pharmacy, Nandi Hills, Dhamangaon, Tal. Igatpuri, Dist. Nasik.*

Ultra Performance Liquid Chromatography (UPLC) is a relatively new technique giving new possibilities in liquid chromatography, especially concerning decrease of run time and solvent consumption. UPLC chromatographic system is designed in a special way to with stand high system back-pressures. Special analytical columns packed with 1.7µm particles are used in connection with this system. UPLC takes advantage of technological strides made in particle chemistry enhancing performance, system optimization, detector design, data processing and control. Using sub2 µm particles and mobile phases at high linear velocities, and instrumentation that operates at higher pressures than those used in HPLC, dramatic increases in resolution, sensitivity, and speed of analysis can be obtained. This new category of analytical separation science retains the practicality and principles of HPLC while creating a versatile improvement in chromatographic performance. Various applications of UPLC includes Analysis of Natural Products and Traditional Herbal Medicine, Identification of Metabolite, ADME (Absorption, Distribution, Metabolism, Excretion), Dissolution Testing, Manufacturing / QA / QC, Method Development / Validation, Impurity Profiling. In this research Authors have planned to use UPLC for AMD & Validation for some common drugs. This use of UPLC shall save time, cost & most important it shall reduce the usage of organic solvent decreasing carbon footprints and helping clean environment.

**Key words:** chromatography, UPLC, Analysis

## RV11: Molecular Modelling: An Upcoming Approach

Kundan Tiwari

*S. M. B. T. College of Pharmacy, Dhamangaon. Nashik.*

The molecular modeling method used as computational method in drug design process. The contributions from this evolving field have become apparent to both pharmaceutical scientists and academic biomedical researchers. The molecular modeling is used to study the drug-receptor interaction, to calculate molecular properties, to generate pharmacophore hypotheses and to design new compound with better interactions. Such methods are called in silico drug design and these are based on computers, indicates that the process is carried out virtually by using relevant software. This review mainly focuses on the different aspects of molecular modeling, various methods used and its significance in designing of new drugs.

**Keywords:** Molecular Modelling, drug design

## RV12: Colon Targeted Drug Delivery System

Vishal D. Chaudhari, V.R. Mahajan

*SMBT College of Pharmacy, Dhamangaon, Nasik.*

Oral delivery has become a widely accepted route of administration of therapeutic drugs, the GIT formidable barriers to drug delivery. Colonic drug delivery has gained increased importance of local diseases associated with colon but also its potential for the delivery of proteins and therapeutic peptides. To achieve successful colonic delivery, a drug needs to protected from absorption and environment of the upper gastrointestinal tract and then be abruptly released into proximal colon which is considered the optimum site for

colon targeted drug delivery of drugs. Colon targeting is naturally of value for the topical treatment of diseases of colon such as Chron's diseases, ulcerative colitis, colorectal cancer and amebiasis, peptides, proteins, oligonucleotides and vaccines pose potential candidature for colon targeted drug delivery.

**Keywords:** colon, Chron's diseases, ulcerative colitis, colorectal cancer and amebiasis

## RV13: Review On In Vitro Fertilization

Rohit Jadhav, Mrunmayee Sonawane, Saptarshi S Dutta

*SMBT College of Pharmacy, Nandi Hills, Dhamangaon, Tal.Igatpuri, Dist.Nasik*

In vitro fertilization, popularly referred to as IVF, has captured the attention of the public since its sensational introduction in 1978. Fertilization involves the union of eggs (released from ovary) and sperm (from semen) in the fallopian tube. In IVF, this union is made possible in a lab after eggs and sperms have been collected. It is followed by the transfer of embryos to the uterus to continue growth. Since its first successful result in 1978, clinicians and researchers have been working on increasing the efficiency and safety of in vitro fertilization (IVF). As a result of advances in technology and understanding of human reproduction, IVF success rates have increased while high-order multiple pregnancy (triplets and more) rates have decreased. On the other, there is opportunity for further improvement as many couples still face 'unexplained infertility' and high rates of twin pregnancies. Latest technologic and scientific improvements in IVF are promising. Today assisted reproductive technology is available throughout most of the civilized world, and the practice is largely different from that used during the early days. Refinements in laboratory technology and clinical practice have allowed IVF to evolve into a medical procedure that is efficient, safe, readily accessible, and relatively affordable. More than 2 million IVF children have been born to date and it is likely that continued enhancements will widen its appeal and applicability.

**Keywords:** fertilization, IVF

## RV14: Sln As A Carrier For NDDS And Its Recent Advancements

Amol R. Katore, T.D. Saindane

*SMBT College of Pharmacy, Nandi Hills, Dhamangaon, Tal.Igatpuri, Dist. Nasik.*

Solid lipid nanoparticles (SLN) have emerged as a next generation drug delivery system with potential applications in pharmaceutical field, cosmetics, research, clinical medicine and other allied sciences. SLN or liposphere or nanosphere system is the most feasible particulate carrier system which is an alternative to nanoemulsions, liposomes and polymeric nanoparticles. Recently, increasing attention has been focused on these SLN as colloidal drug carriers for incorporating hydrophilic or lipophilic drugs. The ability of SLNs to incorporate drug into nanocarrier that offer new type in drug delivery system. Therefore SLNs is reaching the goal of controlled and site specific drug delivery system. SLNs are with a size in odeling range can protect the drug against in vitro and in vivo degradation, it releases the drug in controlled manner and also offers the possibility of drug targeting. The use of SLNs is an universal approach to increase the therapeutic performance of poor soluble drugs in oral route of administration. SLN is one of the approaches to overcome the formulation problems of the new drugs. This system offers added advantages in comparison to other related particulate drug delivery systems. The present review emphasizes on various basic and applied

aspects of solid lipid nanoparticles in novel drug delivery system especially techniques involved in their production, charac$terization and various applications and advancements of SLN in formulations as NDDS.

**Keywords:** Solid lipid nanoparticles, particulate drug delivery systems

## RV15: Ultrasound Extraction – A Promising Extraction Technique For Natural Products

Umesh K. Sabale, Vishal B. Revagade, Manisha. R. Kalantri.

*Dept. of Pharmacognosy, S.M.B.T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist-Nashik, M.S.422403.*

Since the last decade, there is enhanced interest for the use of ultrasound for the extraction of the constituents from plant material. The traditional techniques like maceration, percolation, decoction, etc., are time, solvent consuming and thermally unsafe. This review brings into prominence the importance of novel methods of extraction for delivering high quality product. Ultrasound is a frequencies above 20,000 Hz. In the extraction process these sound waves are the forced used to accelerate the extraction. Ultrasound extraction is primarily associated with cell disruption or disintegration. When sonicating liquids at high intensities, the sound waves that odeling d into the liquid media results in alternating high pressure (compression) and low pressure (rarefaction) cycles, with rates depending on the frequency. In pharmaceutical practice ultrasound is usually produced magnetostrictive or piezoelectric ultrasonic transmitters. Discussions on the main parameters influencing the extraction efficiency High and fast extraction performance ability with less solvent consumption and protection offered to thermolabile constituents are some of the attractive features of this new promising ultrasound extraction technique.

**Keywords:** Ultrasound, extraction

## RV16: Review On Liquisolid Compacts

Nutan V. Dongre

*S. M. B. T College of Pharmacy, Dhamangaon, Nashik.*

The dissolution properties of a drug and its release from a dosage form have a basic impaction its bioavailability. Solving solubility problems are a major challenge for the pharmaceutical industry with developments of new pharmaceutical products. Liquid, solid technique is a new and promising method that can change a dissolution rate of water insoluble drugs. According to new formulations of liquid-solid compact, liquid medication such as solution and or suspension of water insoluble drugs in suitable non volatile liquids vehicles can be converted into acceptably flowing and compressible powders by blending with selected powder excipients, it has been spectaculated that such system exhibit enhanced release profiles.

**Keywords:** Compacts, dissolution rate

## RV17: Review On 3D QSAR Models: A New Approach

Kanchan M. Khedkar

*S. M.B. T. College Of Pharmacy, Dhamangaon (Nashik).*

A module that facilitates evaluation of three dimensional molecular fields around molecules and generates relationship of these fields values. The k-nearest neighbor method is used for generating relationship between activity and molecular field and provides interpretation of results thus providing clues for designing new molecules. Similarly to many 3D QSAR methods, kNN-MFA requires suitable alignment of set of molecules. This is followed by generation of a common rectangular grid around the molecules. The steric and electrostatic energies are computed at the lattice points of the grid using methyl probe of charge +1. These interaction energy values at the grid points are considered for relationship generation using kNN method and utilized as descriptors for obtaining distances within this method.

**Keywords:** QSAR, CADD

## RV18: Application Of Structure Drawing Software

Revagade V. B., Bhosale S. K.

*S. M. B. T. College Of Pharmacy, Dhamangaon (Nashik).*

With the aid of these one can create professional looking articles and drawings, and a large amount of time for the rewriting, redrawing and making corrections can be spared as well. The creation of chemical structures with the conventional drawing software packages would be extremely practically impossible. With publication in mind aesthetics and quality come to the front, ensured by built-in templates, bonds constrained to fixed length and angles, etc. Direct 3D editing is usually not possible –3D features of a molecule can be odeling d only by using the wedged/hashed bond drawing methodology. The availability of different tools (palette of fonts, arrows, lines and curves, arcs and other shapes or graphic primitives, etc.) is also of high importance. If a true 3D representation of the molecule is needed, its import from a odeling program or 3D database is the most feasible arrangement.The presented drawing software applications work on the Windows or McIntosh platforms and some under Linux as well. Another important point is the user-friendliness of the program. This means that the user interface of the program, which ensures the interactive two-way communication between the user and the machine, should be simple but effective. The information sharing with other programs should also be many-sided. In this review the most popular publication quality chemical drawing software applications on the MS.

**Keywords:** chemical drawing, software

## RV19: Review On Pulsatile Delivery

Ravindranath Misal

*S. M. B. T. College Of Pharmacy, Dhamangaon (Nashik).*

Controlled drug delivery systems have acquired a center stage in the arena of pharmaceutical R&D business. Such a system offer temporal and/or spatial control the release of drug and grant a new lease on life to a drug molecule in terms of patentability. Oral controlled drug delivery system represents the most popular for

controlled drug delivery systems for the obvious advantages of oral route of drug administration. Such systems release the drug with constant or variable release rate. These dosage forms offer many advantages, such as nearly constant drug level at site of action, prevention of peak-valley fluctuations, reduction in dose of drug, release dosage frequency, avoidance of side effects, and improved patient compliance.

**Keywords:** Pulsatile Delivery

## RV20: Parenteral Controlled Drug Delivery System

Aman D. Ikhankar, Ashwini P. Gowardhane, S. S. Shinde.

*S. M. B. T. College Of Pharmacy, Dhamangaon, Nashik.*

The parenteral administration route is the most effective and common form of delivery for active drug substances with poor bioavailability and the drug with narrow therapeutic index. Drug delivery technology that can reduce the total number of injections throughout the drug therapy period will be truly advantageous not only in terms of compliance, but also to improve the quality of the therapy. Such reduction in frequency of drug dosing is achieved by the use of specific formulation technologies that guarantee the release of the active drug substance in a slow and predictable manner. The development of new injectable drug delivery system has received considerable attention over the past few years. A number of technological advances have been made in the area of parenteral drug delivery leading to the development of sophisticated system that allow drug targeting and the sustained or controlled release of parenteral dosage form. Such as in-situ depot forming implants, infusion devices and injectable of liposomes, noisome, nano particles and resealed erythrocytes.

**Keywords:** Parenteral, Drug delivery

## RV21: Tridax Procumbens: A Medicinal Gift Of Nature

Sujit S. Kale, Sachin R. Kochar.

*SMBT College of Pharmacy, Nandi Hills, Dhamangaon, Nasik, India*

Nature has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural resources. Traditional medicine is an important source of potentially useful new compounds for the development of chemotherapeutic agents. The essential values and uses of some plants have been worked out and published, but many of them remain unexplored to date. Therefore, there is a necessity to explore their uses and to conduct pharmacognostic and pharmacological studies to discover their medicinal properties. Tridax procumbens (L.) is a spreading annual herb found throughout India but unfortunately it is one of the neglected plants. Hence, the present review aims to open new avenues for the improvement of medicinal use of Tridax procumbens (Compositae) for various ailments and to bring the anti-diabetic medicinal plant to the scientists' notice, and raise awareness and add value to the resource. This review attempts to highlight the available literature on Tridax procumbens (L.) A study had found anti-cancer properties of Tridax procumbens against human prostate epithelial cancer cell line PC 3. Also pharmacological activities like hepatoprotective activity, antidiabetic activity, antiinflammatory, wound healing, antidiabetic activity, hypotensive effect, immunomodulating property, bronchial catarrh, dysentery and diarrhea and to prevent falling of hair, promotes the growth of hair, and antimicrobial activity against both Gram-positive and Gram-negative bacteria. **Keywords:** Tridax Procumbens, anti-diabetic

## RV 22: Pyrimidine Heterocycles - A Review

Nilesh V. Kadam, Sandeep Shinde, Sachin Shinde.

*Department Of Chemistry, S. M. B.T. College Of Pharmacy, Nandi Hills, Dhamangaon Tal. Igatpuri, Dist. Nashik (MS), India.*

The chemistry of pyrimidine is a blossoming field. Numerous method for the synthesis of pyrimidine and also their diverse reactions offer enormous scope in the field of medicinal chemistry. The utility of pyrimidines as synthon for various biologically active compounds has given impetus to these studies. The review article aims to review the work reported and the chemistry, biological significance and pharmacological activities of pyrimidines during past years.

**Keywords:** Heterocycles, Fused Pyrimidines, Reactions, Synthesis, Biology, Pharmacological Significance

## RV23: Pharmaceutical Cosmetics

Priyanka M. Galhotra, Vijay R. Mahajan

*S. M. B. T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist-Nashik, M.S.422403*

In the 21st century the wind of changes in the society is blowing forcefully in all parts of the world for the application of cosmetics. Cosmetics word is originated from the Greek word “Kosmeticos” means adorn and preparation, which is used for the purpose, is known as cosmetics. We must define the cosmetic as “Cosmetic are external preparation meant for to apply on external part of the body, i.e., nails, hair for coloring, covering, softening, cleaning, nourishing, waving, setting, mollification, preservation, removal and protection”. The pharmaceutical and cosmetic industries are large and still growing. New products, their marketing and sophisticated advertising have been very effective in these industries. They are more and more exacting and highly complex in their requirements. They require specification products with specific performance characteristics. All cosmetic preparation has their application for long or short periods to beautify the body as well as to keep the body healthy up to some extend and has psychological impact to other. The “active life” of any cosmetic preparation begins the moment it is brought in contact with the skin/hair/teeth/or nails and ends when it is removed or has evaporated. During it is active life; it has initimate reciporal relationship, which results, cosmetic changes on the body. The cosmetic product prevents its outmost layer from drying out, penetrate below the external layer and introduce active substances in to deep lying strata or adhere only superficially to change color or luster of areas.

**Key words:** Kosmeticos, active life

## RV24: Anti-Wrinkle Preparations

Maitreyi B. Bhosale, Vijay R. Mahajan

*S. M. B. T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist-Nashik, M.S.422403*

Wrinkling of the skin is the most obvious sign of deterioration of the human body with age. This process involves a number of genetic, constitutional, hormonal, nutritional, and environmental factors, in addition to the influence of frequently repeated facial movements during laughing, smoking, etc. Targets of Anti-wrinkle Compounds Modern anti-wrinkle preparations feature a large variety of active ingredients against skin aging.

Most of these ingredients are based on recent findings that in aging the balance between collagen synthesis and collagen fragmentation is altered. A number of products, including diets, drugs and supplements, are promoted to have anti-wrinkle properties, many anti-wrinkle products and treatments have not been proven to give lasting or major positive effects. One study found that the best performing creams reduced wrinkles by less than 10% over 12 weeks, which is not noticeable to the human eye. Another study found that cheap moisturizers were as effective as high-priced anti-wrinkle creams. Skin aging is a complex process induced by constant exposure to ultraviolet (UV) irradiation and damages human skin. UV generates reactive oxygen species leading to collagen deficiency and eventually skin wrinkling. The aim of this study is to study and investigate the anti aging potential of an anti-wrinkle formulations.

**Key words:** collagen fragmentation, skin wrinkling, ultraviolet (UV) irradiation, aging

## RV25: Role Of Bioinformatics: A Key Role In Drug Designing And Development

Gedam S. S[1], Shahahre H. V[2]

*[1]Sandip Institute of Pharmaceutical Sciences, Mahiravani, Nashik, Maharashtra., [2]SNJB's Shriman Sureshdada Jain College of Pharmacy, Chandwad, Nashik, Maharashtra.*

In recent years, there is an explosion in the amount of biological information that is available. Various databases are doubling in size every 15 months and we now have the complete genome sequences of more than 100 organisms. It appears that the ability to generate vast quantities of data has surpassed the ability to use this data meaningfully. The pharmaceutical industry has embraced genomics as a source of drug targets. It also recognizes that the field of bioinformatics is crucial for validating these potential drug targets and for determining which ones are the most suitable for entering the drug development pipeline. Computer-Aided Drug Design (CADD) is a specialized discipline that uses computational methods to simulate drug-receptor interactions. The processes of designing a new drug by using bioinformatics tools have opened a new area of drug research and development. On the scientific side of the hub, bioinformatic methods are used extensively in molecular biology, genomics, proteomics, other emerging areas i.e. metabolomics, transcriptomics and in CADD research. There are several key areas where bioinformatics supports CADD research which involves Virtual High-Throughput Screening (vHTS), Sequence Analysis, Homology Modeling, Similarity Searches, Drug Lead Optimization, Physicochemical Modeling, Drug Bioavailability and Bioactivity. One of the non-quantifiable benefits of CADD and the use of bioinformatics tools is the deep insight that researchers acquire about drug-receptor interactions. They often come up with new ideas on how to modify the drug compounds for improved fit. This is an intangible benefit that can help design research programs. This review concludes with the role of bioinformatics and CADD together for drug research and development.

**Keywords:** CADD, bioinformatics, drug research and development.

## RV26: Pharmacovigilance

Kukade Sharad, Morankar P. G.

*Department of Pharmacology, S. M. B. T. Collage of Pharmacy, Nandi-Hills, Dhamangaon, Tal- Igatpuri, Dist- Nashik.*

Derived from the Greek two word 'pharmakon' means 'drug' and 'vigilare' means 'to keep watch'. It is defined as the science and activity concerned with the detection, assessment, understanding and prevention of adverse reaction to medicines. Pharmacovigilance (PV or PhV) heavily focuses on ADRs which are defined as response of drug which is noxious and unintended, including lack of efficacy which occurs at doses normally used for prophylaxis, diagnosis, therapy, disease or modification of physiological function. It also includes medical errors such as overdose and misuse and abuse of the drug. Information received from patients and healthcare providers, as well as medical literature, plays, critical role in providing the data necessary for Pharmacovigilance to take place. To test a pharmaceutical product in most countries, adverse event data received by the license holder or pharmaceutical company must be submitted to the local drug regulatory authority. It is concerned with identifying hazards associated with minimizing the risk of any harm that may come to patients. The ultimate goal of this activity was to improve the safe and rational use of medicines, thereby improving patient care and public health. To describe the scientific characteristics of pharmacovigilance and to describe the importance of pharmacovigilance. When ADRs appear- particularly when previously unknown in association with the medicine- It is essential that they should be analyzed and communicated effectively to an audience that has the knowledge to interpret the information.

**Keywords:** pharmacovigilance, ADRs

## RV27: Importance of Herbal Drugs In Cancer

Sneha Balkawade, Pravin Morankar

*SMBT College of Pharmacy, Nandi Hills, Dhamangaon*

Cancer also known as a malignant tumor, is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. It has been estimated that 600000-700000 deaths in India were caused by cancer in 2012. Many of herbal medicines and its active ingredients have been recognized as potential modifiers of cancer. Herbal medicines are safe having less side effects as compare to radiation therapy, synthetic drugs, chemotherapy like treatments. Herbal medicine is regularly promoted as a natural way to help you relax and manage with anxiety, depression and other conditions such as hay fever, skin diseases and menstrual problems. Herbal medicine is one of the most commonly used complementary and alternative therapies (CAM) by people with cancer. Some studies have shown that as many as 6 out of every 10 people with cancer (60%) use herbal remedies alongside conventional cancer treatments.

**Keywords**: Cancer, Herbal

## RS1: Design, Synthesis,Characterization And Pharmacological Evaluation Of Some Nitric Oxide Releasing Anti-Inflammatory Compounds

Amruta R. Nikam, Dr. Anwar R. Shaikh, Dr. Prashant Naik, Amruta Sonje, Deepika Wable.

*Department of Pharmaceutical Chemistry, Bhujbal Knowledge City, MET's Institute of Pharmacy, Adgaon Nasik 422003, Maharashtra, IndiaN.*

In this research work, Design, Synthesis, Characterization and Pharmacological evaluation of nitric oxide releasing Anti-inflammatory compounds has been attempted by using in-vitro HRBC membrane stabilization method. Non steroidal anti inflammatory drug are among the most widely used medications in the world because of their demonstrated efficacy in reducing pain and inflammation. According to the FDA the prevalence of serious events such as symptomatic ulcers, bleeding, perforation has been shown in 1 to 2% of patients treated with NSAID's for upto three months, while for those patients treated for year it can be seen in 2 to 5%. That is why, additionally compound have been developed in the search for better tolerated non steroidal anti inflammatory drug by adding nitric oxide releasing group, because nitric oxide is an important gases messenger that mediates variety of physiological action including gastro protection.

**Keywords:** Nitric oxide, anti-inflammatory activity, HRBC-membrane stabilization method.

## RS2: Predicting The Benzothiazole Derivatives As Anti-Tumor Agent Using 2d And 3d (K-Nearest Neighbor Method) Analysis

Imadul Islam, Malik Amber, Momin Ziyaul Haque, Dr. Shaikh A.R.

*Department of Pharmaceutical Chemistry, Bhujbal Knowledge city, MET's Institute of Pharmacy, Adgaon, Nashik, India.*

In the present study, antitumor activity was predicted by using a QSAR modeling approach for a series of Benzothiazole (35 compounds) derivatives using QSAR module. 2D QSAR model for the prediction of antitumor activity was obtained by applying MLR giving r2 =0.7663 and q2 =0.5290 and partial least squares giving r2=0.8332 and q2=0.7665. 3D QSAR study was performed using kNN-MFA approach for electrostatic and steric fields. Models are tested successfully for internal (q2=0.7402) and external (predictive r2=0.8277) validation criteria. QSAR modeling resulted in the identification of common structural features responsible for prediction of apoptosis-inducing activity for Benzothiazole derivatives. 2D QSAR studies revealed that AI descriptors were major contributing descriptors. Descriptors values obtained in this study helped in quantification of the structural features of Benzothiazole derivatives. The overall degree of prediction was found to be around 52% in case of MLR. Among the 2D QSAR models (MLR, and PLS), results of PLS analysis showed significant predictive power and reliability as compare to other method. The 3D QSAR was performed using kNN-MFA method. The overall degree of prediction was found to be around 82% in case of kNN-MFA method. These results provide useful clues for designing novel compounds for the treatment of cancer.

**Keywords:** antitumor activity, Benzothiazole, SAR

## RS3: Predicting Ccr5 Antagonist As Anti-Hiv-1 Agent Using 3D Qsar (Knn-MFA Method)

Malik Amber, Imadul Islam, Momin Ziyaul Haque, Dr. Shaikh A.R.

*Department of Pharmaceutical Chemistry, Bhujbal Knowledge city, MET's Institute of Pharmacy, Adgaon,, Nashik, India.*

Quantitative structure–activity relationship (QSAR) analysis for recently synthesized N-[3-(4 benzylpiperidin-1- yl)propyl]-N,N'-diphenylureas derivatives was studied for their CCR5 antagonists as anti-HIV-1 agents. The statistically significant 2D-QSAR model (r2 = 0.9493; q2 = 0.7653; F test = 42.09; r2 se = 0.1672; q2 se = 0.3597; pred_r2 = 0.5311; pred_r2se = 0.5001) were developed using molecular design suite (VLifeMDS 4.2). The study was performed with 20 compounds (data set) using random selection and manual selection methods used for the division of the data set into training and test set. Multiple linear regression (MLR) methodology with stepwise (SW) forward-backward variable selection method was used for building the QSAR models. The results of the 2D-QSAR models were further compared with 3D-QSAR models generated by kNN-MFA, (k-Nearest Neighbor Molecular Field Analysis). The statistical significant model (q2 = 0.4644; q2se = 04751; pred_r2 = 0.4332; pred_r2se = 0.4890) were developed using molecular design suite (VLifeMDS 4.2) these investigating the substitutional requirements for the favorable anti-HIV-1 agents. The results derived may be useful in further designing novel N,N'-diphenylurea derivatives as CCR5 antagonists prior to synthesis.

**Keywords:** N,N'-diphenylurea derivatives , CCR5 antagonist, AntiHIV-1, Quantitative structure-activity relationship, kNN-MFA

## RS4: Design, Synthesis, Characterization And Pharmacological Evaluation Of In-Vitro Cytotoxic Activity Of Novel Copper Complexes Of Substituted 1h-Benzimidazoles

Ashwini H. Pagare, Vikas C. Nathe, Rani S. Kankate, Dinesh D. Rishipathak, Rajendra S. Niphade.

*Department of Pharmaceutical Chemistry, Bhujbal Knowledge City, MET's Institute of Pharmacy, Adgaon Nasik 422003, Maharashtra ,India*

In recent years, there has been a rapid expansion in research and development of novel metal-based anticancer drugs to improve clinical effectiveness and to reduce general toxicity and also to broaden the spectrum of activity. Hence,in this studies, an attempt has been made to Design, Synthesize, Characterize novel Copper complexes of substituted 1H-Benzimidazoles and their pharmacological evaluation for in vitro Cytotoxic activity by Brine shrimp lethality bioassay. Thereafter, results were estimated in terms of LC50 as compared with the standard drug Cisplatin.. All complexes showed significant cytotoxic activity. Among all complexes, complex (4c) showed more cytotoxic activity and it is more cytotoxic than Cisplatin. Complex (4e) was found to possess least cytotoxic activity. Complexes(4b,4d and 4h) showed moderate cytotoxic activity.

**Keywords:** Benzimidazole-Copper Complexes, Cytotoxicity, Brine shrimp lethality bioassay.

## RS5: Microwave Assisted Synthesis And Pharmacologiacal Evaluation Of Few 1,2,4-Triazole Derivatives

Kamlesh V. Patil, Kanchan Somase, Trupti Jadhav, Dr. Dinesh D. Rishipathak

*Department of Pharmaceutical Chemistry, Bhujbal Knowledge City, MET's Institute of Pharmacy, Adgaon Nasik 422003, Maharashtra, India.*

Microwave Assisted Organic Synthesis (MAOS), which has developed in recent years, has been considered superior to traditional heating. The technique offers simple, clean, fast, efficient, and economic for the synthesis of a large number of organic molecules. Important advantage of this technology include highly accelerated rate of the reaction, Reduction in reaction time with an improvement in the yield and quality of the product. In the present investigation, microwave assisted synthesis and Pharmacological evaluation of few 1,2,4-triazole derivatives has been attempted. Wherein, the 1,4-dihydropyridines were coupled to 1,2,4-triazoles with the aim of achieving enhanced anticonvulsant effect. The synthesized compounds were confirmed on the basis of IR, 1H-NMR and Mass analyses. An acute toxicity study was done to determine the LD50 of the newly synthesized compounds. Statistical testing was done by one way ANOVA followed by Dunnett's test. The pharmacological evaluation of the compounds showed an increase in latency (onset time) to induce convulsions; decrease in the number of convulsions and increase in percentage protection as compared to control. The compounds C333 and A111 showed the highest percentage of protection (80%) at the dose of 20 mg/kg among the evaluated compounds compared to control.

**Keywords:** Microwave assisted Synthesis, Anticonvulsant Activity, 1,4 -dihydropyridine.

## RS6: Design, Synthesis And Biological Evaluation Of 4-Thiazolidinone Derivatives Of Substituted Thiadiazole

S. S. Ugalmugale, R. S. Aher, R. B. Ghuge, A. R. Shaikh

*MET'S Institute of Pharmacy, Bhujbal Knowledge City, Adgaon, Nashik-422003. Maharashtra.*

Thiadiazole moiety acts as 'hydrogen binding domain & important pharmacophore' and 'two electron donor systems'. A variety of 4-Thiazolidinones derivatives have been synthesized with good yields, simple work up procedures and confirmed their structures by IR, NMR and Mass Spectra. Synthesized Compounds were screened in vitro for antimicrobial activities against both strains of Gram-positive and Gram-negative bacteria & fungi. These results confirmed that the 4-thiazolidinone skeleton has great potential as antimicrobial agent. The MIC of compounds TZD 4, TZD 8 against S. aureus was found to be 12.5 µg/mL. The MIC of compounds TZD 3 against S. aureus was found to be 25µg/mL. The MIC of compounds TZD 3, TZD 8 against E. coli was found to be 25 µg/mL. The MIC of compounds TZD 3, TZD 4, TZD 6 against A. niger was found to be 12.5 µg/mL. The MIC of compounds TZD 5, TZD 7, TZD 8 against A. niger was found to be 25 µg/mL. In this research work, design, synthesis and biological evaluation of 4-thiazolidinone derivatives of substituted thiadiazole have been attempted.

**Key words**: Thiadiazole, thaizolidinone, antimicrobial activity

## RS7: Pharmacognostic and preliminary phytochemical investigation of Cordia dichotoma bark

P. A. Patil, M. R. Kalantri, A. R. Surana

*Dept. of Pharmacognosy, S.M.B.T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist-Nashik, M.S.422403*

Cordia dichotoma Linn. also known as Bird Lime Tree and belongs to the family Boraginaceae. A decoction of bark is used in dyspepsia and fever. These comply with the claims made in the traditional medicinal texts. Present study deals with to establish pharmacognostic and phytochemical standards of Cordia dichotoma bark. Microscopic evaluation of Cordia dichotoma bark shows presences of cork, phellogen, cortex, medullary rays, scleroids, stone cells, starch grains. Results of Cordia dichotoma bark yielded 8.66 % total ash; acid insoluble ash not more than 0.05%, water soluble ash not more than1.33%, alcohol extractive value not more than 2.0% (Hot extraction), 2.5% (Cold maceration) & water extractive value not more than 2.0% (Hot extraction), 2.6% (Cold maceration) and 8.60% Total moisture content by LOD. Major phytoconstituents in the Cordia dichotoma bark were found to be sterol, glycosides, triterpenoids, flavanoids, tannins, proteins & carbohydrate. Pharmacognostical and phytochemical parameters determined in the present work can serve as major criteria for identity, quality and purity of a crude drug and extracts.

**Keywords:** Cordia dichotoma, Pharmacognosy, phytochemical standards

## RS8: Synthesis, Characterization and Antimicrobial Activity of Some Aldimine Derivatives

Shahare H. V[1], Amrutkar R. D[2], Kapse S. N[2]

*Department of Pharmaceutical Chemistry, [1]SNJB's Shriman Sureshdada Jain College of Pharmacy, Chandwad, Nashik, Maharashtra., [2]SPH College of Pharmacy, Malegaon, Maharashtra.*

Aldimines-bimolecular condensation products of primary amines with aldehydes and represent valuable substrate substrates in synthesis of a large number of industrial compounds via ring closure, cycloaddition, replacement reaction, and etc. In the present investigation, some aldimine derivatives have been synthesized by simple condensation of aromatic aldehyde derivatives with primary aromatic amine derivatives. Their structures have been characterized by Physical constant, Thin layer chromatography, IR, 1H NMR. Further, biological activity of these aldimines was examined against different type of microorganisms and they found to have considerable activity in comparison with the most commonly used antibiotics.

**Keywords:** Aldimines, Schiff bases, Imines

## RS9: Formulation Development And Evaluation Of Mouth Dissolving Tablets By Spray Drying

Vandana R. Daga, Nayana S. Baste.

*Department of Pharmaceutics, SNJB's SSDJ College of Pharmacy, Chandwad, Nasik, Maharashtra.*

ODTs are a solid unit dosage form containing a medicinal substance that disintegrates rapidly and dissolves in the mouth as soon as they come in contact with saliva without the need of water or chewing. The faster the drug in solution form, quicker the absorption and onset of clinical effects. In present research work an attempt was made to prepare Orodispersible tablet of Paracetamol by the spray drying method. Excipients like diluents, disintegrants were studied for flow properties. Orodispersible tablets of Paracetamol were prepared by

the wet granulation method by using different non spray dried diluents and Superdisintegrants. Different diluents like lactose, MCC, mannitol, sucrose and xylitol were spray dried and tested for flow properties. Orodispersible tablets of Paracetamol were prepared by using spray dried diluents and Superdisintegrants. All the resultant tablets were evaluated for different tests like disintegration test, friability test, hardness test, average weight, average diameter and average thickness. Results were analyzed on the basis of disintegration time and % friability. On the basis of result analysis, it was found that tablets prepared by using spray dried diluents were giving disintegration time less than 20 seconds and % friability was also less than 0.8%.

**Keywords:** Mouth dissolving tablets, spray drying, Paracetamol

## RS10: Controlled Release Ambroxol Hydrochloride Microspheres: Effects Of Formulation Parameters

Nayana S. Baste, Charulata T. Nemade, Vandana R. Daga.

*Department of Pharmaceutics, SNJB's SSDJ College of Pharmacy, Chandwad, Nasik. Maharashtra.*

Ambroxol hydrochloride microspheres were prepared by solvent evaporation technique using ethyl cellulose as a matrix-forming agent. Morphological and physicochemical properties of microspheres were investigated by scanning electron microscopy, X-ray diffractometry, differential scanning calorimetry, and fourier transform infrared spectroscopy. Scanning electron microscopy revealed that microspheres were spherical, discrete having smooth and non-porous structure. Encapsulation efficiency of microspheres was found to be 81-94% and drug release was extended up to 12 h. The infrared spectra and differential scanning calorimetry thermographs showed stable character of ambroxol hydrochloride in the drug-loaded microspheres and revealed the absence of any drug-polymer interactions. X-ray diffraction patterns showed that there was decrease in crystallinity of the drug. The best-fit release kinetics was achieved with zero order kinetics and drug release was found to be diffusion controlled. Encapsulation efficiency and drug release was affected by both, concentration of polymer and presence of aluminium tristearate. Particle size was affected by polymer concentration not aluminium tristearate.

**Keywords:** Ambroxol hydrochloride, microspheres, drug-load

## RS11: Synthesis, Characterization And Anticancer Screening Of Delavayin A: A Cyclic Peptide

N. V. Shinde, A. S. Dhake and K. P. Haval.

*Department of Pharmaceutical Chemistry, S.M.B.T. College of Pharmacy, Dhamangaon.*

Delavayin A is a cyclic octapeptide, isolated from roots of *Stellaria delavayi*, belonging to the family, caryophyllaceae. Here synthesis of this cyclic peptide was carried out by using a solution phase synthesis. The structure of this synthesized compound was confirmed by IR, 1H NMR, MASS and elemental analysis. The synthesized compound was also evaluated for in vitro anticancer activity by using Brine shrimp assay and against a panel of 60 human tumor cell lines at NCI, USA. The synthesized cyclopeptide possessed good activity against many cell lines. The analogs of this molecule may show potent anticancer activity.

**Keywords:** Delavayin A, cyclic octapeptide, solution phase synthesis

## RS12: Anti-Inflammatory And Antioxidant Activity Of Stems Of *Ixora coccinea* Linn.

Surana A. R[1], Wagh R. D[2]

[1]*Dept. of Pharmacognosy, S.M.B.T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist-Nashik, M.S.422403*

[2]*A. R. A. College of Pharmacy, Dhule, M.S- 424 005*

Present study deals evaluation of anti-inflammatory and antioxidant activity of petroleum ether, chloroform and methanol extracts of Ixora coccinea stem. Anti-inflammatory activity was studied in vivo by carrageenan-induced paw edema in a rat model and in vitro by human red blood cell (HRBC) membrane stabilization method. Antioxidant activity was evaluated in a series of in vitro assay involving 2,2-diphenylpicrylhydrazyl (DPPH) radical scavenging, hydrogen peroxide scavenging and nitric oxide scavenging activity. Petroleum ether, Chloroform, methanol extracts of Ixora coccinea stems and diclofenac sodium were shown HRBC membrane stabilizing activity and stabilized HRBC membrane up to 21.207%, 30.865%, 26.686% and 35.173% respectively at conc. 150mg/ml in hypotonic solution. The chloroform extracts of Ixora coccinea stems at the doses of 100mg/kg moderately inhibited paw edema 28.42, 36.07 and 38.36 % at 60 min., 120 min and 180 min respectively. Extracts of *I. coccinea* exhibited scavenging effect in a concentration dependent manner. IC50 of chloroform extract was 87.72, 67.84, 69.06µg/ml for DPPH radical scavenging, hydrogen peroxide scavenging, nitric oxide scavenging, respectively.

**Keywords:** Ixora coccinea, anti-inflammatory, antioxidant activity, HRBC

## RS13: Development And Evaluation Of Polyherbal Formulation For Anti-Inflammatory Activity

M. R. Kalantri, A. R. Surana

*Dept. of Pharmacognosy, S.M.B.T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist-Nashik, M.S.422403*

The present study explores development of Polyherbal formulation and evaluation of anti-inflammatory activity. Polyherbal suspensions PF-1 & PF-2 of alcoholic and hydroalcoholic extracts of bark Cordia dichotoma and fruit of Aegle marmelos were prepared. Anti-inflammatory activity was studied in vitro by human red blood cell (HRBC) membrane stabilization method of Polyherbal suspensions PF-1 & PF-2. Sedimentation volume and preliminary phytochemical investigation of PF-1 & PF-2 was carried out. Polyherbal suspensions PF-1 & PF-2 shown dose-dependent protection of HRBC in hypotonic solution. Polyherbal suspensions PF-1 shown significant protection of HRBC in hypotonic solution than PF-2.

**Keywords:** Polyherbal formulation, anti-inflammatory activity, Cordia dichotoma ,Aegle marmelos, HRBC

## RS14: Formulation Of Herbal Ink: Safe, Easy, and Ecofriendly Alternative.

Rohit R. Gugale, Charulata T. Nemade, Nayana S. Baste.

*SNJB's SSDJ College of Pharmacy, Neminagar, Chandwad, Nashik-423101.*

Nature has gifted us more than 500 color yielding plants. India is a major exporter of herbal dyes due to forbid on production of some of synthetic dyes in developed countries due to environmental pollution problem. A survey in primary school indicated that few children inadvertently ingested ink, currently it is observed that only synthetic ink are used which may be harmful for children health. Hence for benefit of children, it was

thought worth to prepare edible ink. The raw material used was petals of different flowers. Different herbal inks were prepared from different biological sources such as Clitorea ternatea (Fabaceae), Caesalpenia pulcherima (Fabaceae) and Lantana camera (Verbenaceae). The herbal inks were evaluated for several parameter such as Color, Odor, Taste, Brightness, Drying time, Non-clogging nature, Viscosity, Permanency of color, Stability. All inks were found to edible, safe, easy to prepare and stable.

**Keywords:** Caesalpenia pulcherima, Clitorea ternatea, Lantana camera Plant extracts, Water, Vinegar

## RS15: Pharmacognostic Investigation Of Curry Leaves.

A. D. Tipale, K. R. Shivade, A. R. Surana

*Dept. of Pharmacognosy, S.M.B.T. College of Pharmacy, Dhamangaon, Tal-Igatpuri, Dist-Nashik, M. S. 422403*

The aim of this study is to develop standard pharmacognostic parameters for leaves of Murraya koenigii (L) Spreng (Rutaceae). Pharmacognostic evaluation included examination of morphological and microscopic characters, determination of ash value, extractive value, powder characters and moisture content. The studied morphoanatomical characters of the leaves would be an useful tool for the identification this herbal drug. Microscopical Transverse section shows a dorsi ventral structure. Epidermis is composed of cubical to slightly tangentially elongated cells. The upper epidermal cells in surface view are polyhedral and straight walled. Trichomes are rare unicellular and found mainly on midrib. Results of Murraya koenigii leaves yielded 9 % total ash; acid insoluble ash not more than 0.5%, water soluble ash not more than0.5%, alcohol extractive value not more than 20.12% (Hot extraction), 18% (Cold maceration) & water extractive value not more than 30.4% (Hot extraction), 11.9% (Cold maceration) and 5.2% total moisture content by LOD. Major Phytoconstituents Murraya koenigii in leaves were found to be glycosides, volatile oil, triterpenoids, flavanoids and tannins. Pharmaacognostical and physiochemical parameters determined in the present work can serve as major criteria for identity, quality and purity of a crude drug and extracts.

**Keywords:** Murraya koenigii, Pharmacognosy, ash, extractive value

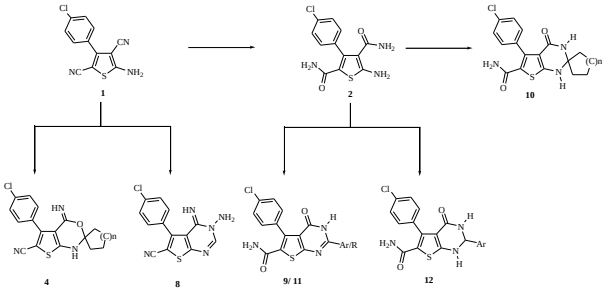
## RS16: Synthesis Of Thieno[2,3-D]Pyrimidine And Thieno[3,2-E]Pyridines And Thieno[2,3-D][1,3]Oxazine Derivatives

Raghunath B. Toche, S. M. Chavan.

*Organic Chemistry Research Center, Department of Chemistry, K.R.T. Arts, B. H. Commerce and A. M. Science College, Affiliated University of Pune, Gangapur Road, Nashik- 422 002, (MS).*

2-Amino-3-functionally substituted thiophene derivatives are useful precursor in the azo dye industry and as intermediates for the pharmaceutically important thieno[2,3-d]pyrimidines [1-2]. Previously, pharmacological studies of the thienopyridine and thienopyrimidine derivatives extensively showed variety of activities such as antibacterial [3-4], antimicrobial [5], anxiolytic [6], pshycotropic [7]. o-Aminothiophene dicarbonitrile 1 on neat reaction with cyclic ketones in anhydrous ZnCl2 yielded a mixture of fused aminopyridine 3 and iminospirooxazine 4 derivatives. Similarly, pyrimidine derivatives 5 and 8 were obtained by the reaction of this intermediate 1 with formic acid and DMF-DMA followed by hydrazine hydrate respectively. The reaction on o-amino- thiophene dicarboxamide 2 at ambient temperature with cyclic

ketones yielded spiropyrimidine 10 as a sole product in quantitative yield. The regioselective anellated pyrimidine 9, 11 and dihydropyrimidine 12 derivatives were also obtained by the reaction with aromatic aldehydes in the presence of piperidine and iodine respectively.



**Keywords:** Thieno[2,3-d]pyrimidine, Thieno[3,2-e]pyridines, Thieno[2,3-d][1,3]oxazine.

**Compiled and edited by:** Chintamani Joshi, A.R.Surana, N. V. Shinde and Nilesh Kadam. S. M. B. T. College of Pharmacy, Dhamangaon, Tal- Igatpuri, Nasik 422403.

**Acknowledgments:** Savitribai Phule Pune University, Pune S. M. B. T. College of Pharmacy, Dr. A. S. Dhake, Principal, S. M. B. T. College of Pharmacy and Dr. M. R. Kumbhare, Co-ordinator, S. M. B. T. College of Pharmacy.