ONE DAY SEMINAR ON

"INNOVATIONS IN PHARMACEUTICAL RESEARCH - 2013"

SCIENTIFIC ABSTRACTS

27th DECEMBER , 2013

G. Pulla Reddy College of Pharmacy

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27 - 12 - 2013

Programme Schdule

09.00 - 10.00 A.M : Registration

10.00 - 10.30 A.M : Inauguration

10.30 - 11.45 A.M : Guest Lecture I

11.45 - 12.00 P.M : Tea Break

12.00 - 01.00 P.M : Guest Lecture II

01.00 - 02.00 P.M : Lunch Break

02.00 - 05.00 P.M : Oral Presentations

05.00 - 05.30 P.M : Valedictory function

Prize & Certificate Distribution

Objective of the Seminar:

The aim of seminar is to provide a platform to exchange the research innovations and current affairs in the field of pharmacy profession.

Ideas are created and experimented lead to build your career. Come, participate, exchange your ideas, interact and win fabulous prizes along with brain storming seminars of cientific lectures. This is the 3rd seminar as a part of continuous education programme to enrich your knowledge.

VISION

G.Pulla Reddy College of Pharmacy envisages to become the centre of excellence for research in Pharmacy. It aims to contribute significantly to drug development and drug discovery.

MISSION

G.Pulla Reddy College of Pharmacy aims to be on forefront in imparting the disciplined and quality Pharmacy education. The graduate & postgraduate students shall be groomed as responsible & highly acclaimed professionals in the Pharmaceutical Arena.

Courses Offered: B. Pharm

M. Pharm - Pharm. Chemistry
Pharmacognosy
Pharmaceutics
Pharmacology

Ph. D

CONTENTS

INNOVATIVE IDEAS

IND 101

MAGNETIC JET NEEDLE

V. Prashanthi

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Needle-free drug delivery by jet injection is achieved by ejecting a liquid drug through a narrow orifice at high pressure, thereby creating a fine high-speed fluid jet that can readily penetrate skin and tissue. Until very recently, all jet injectors utilized force- and pressure-generating principles that progress injection in an uncontrolled manner with limited ability to regulate delivery volume and injection depth. In order to address these shortcomings, we have developed a controllable jet injection device, based on a custom high-stroke linear Lorentz-force motor that is feed-back controlled during the time-course of an injection.Using this device, we are able to monitor and modulate continuously the speed of the drug jet, and regulate precisely the volume of drug delivered during the injection process. We demonstrate our ability to control injection depth (up to 16 mm) and repeatedly and precisely inject volumes of up to 250μL into transparent gels and post-mortem animal tissue.

IND 102

NANOMATERIALS FOR DIAGNOSIS OF HIV/ HIV DETECTION: SIMPLER NOW??

Ramya Krishna. N[*a], A. Ravi Kiran[a]

G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad.

Detection of HIV virus is possible nowadays only when the symptoms are visible, which occurs only around stage 2 or 3. This makes the chances of patient surviving from less to none. Gold nanoparticles of different shapes and sizes increase in surface to volume ratio and they are having optical, electronic and magnetic properties, which are very sensitive to their environment. If there is any change, it will be reflected as a change in any of their physical properties, which can be measured. This concept is used in nanoparticles based sensing platforms. SERS (Surface Enhanced Raman Spectroscopy) technology, presently used to detect the levels of mercury ions in water using a single chip, can be used to detect HIV in the in the infected blood. SERS-based nano-chip biosensor is user friendly, ultra-fast, highly selective, sensitive, low-cost and non-invasive (painless) biosensor which can be used for diagnosis of HIV. The other innovative idea of treating the HIV infection is inducing mutations in CCR5 gene which is used by virus to infect the cells. Stem cells obtained from the patients are altered and transplanted into the person to make the person resistant to the virus. Also, during the early stages of the infection blood transfusion can be done, so that virus would be removed but it is vital that no virus has invaded cells.

IND 103

REMOTE INTELLIGENT DRUG DELIVERY SYSTEM: A POTENTIAL DEMAND

Gouthami . K

G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad.

Patients who may otherwise be unable to take medication may benefit from new electronic implants capable of dispensing drugs automatically. The Remote Intelligent Drug Delivery System (RIDDS), a device implanted under the skin and connected to a wireless control center, overcomes the inconvenience associated with taking drugs manually. Such devices include built-in sensors that allow health care workers to monitor pulse rate, blood oxygen levels and other functions. Based on the information, they can adjust how frequently the medication is delivered or increase or decrease amounts as necessary. Nowadays, the Remote Intelligent Drug Delivery System (RIDDS) is a potential demand as they will be especially beneficial for people with physical or mental disabilities, who would otherwise be unable to take medications on their own.

IND 104

ORGAN ON A CHIP-ALTERNATIVE TO ANIMAL TESTING

Rizwana Begum

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An Organ-on-a-Chip (OC) is a device that integrates one or several laboratory functions on a single chip that deals with handling particles in hollow micro fluidic channels. Advantages in handling particles at such a small scale include lowering fluid volume consumption (lower reagents costs, less waste), increasing portability of the devices, increasing process control (due to quicker thermo-chemical reactions) and decreasing fabrication costs. Organ-on-chips are considered as next wave of 3D cell culture models. Replacement of animal testing with organ-on-chips may result in useful clinical trials and effective drug development. Different types of organ-on-chips are lung, heart, kidney, gut and more. The near future will surely see enormous advances by using the organ-on-chip technology.

IND 105

ROLE OF NEEDLE FREE INJECTION

Mudassar Shareef

G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad.

Needle free injections are novel drug delivery systems to introduce various medicines without piercing the skin and are capable of injecting the medicines through sub-cutaneous, intra-muscular and intra-dermal routes, moreover this is bio-equivalent to syringe and needle, results in less pain and is strongly preferred by the patients. Not only it can benefit the pharmaceutical industry in increasing product sales, but also has added potential to increase the compliance with different dosage forms and improved outcomes. This developing technology promises to make the administration more efficient and less painful as there are patients who are suffering from chronic diseases and require injectible products 2-3 times a day example: Diabetic patients. This review focuses on the advancement of needle less drug delivery systems not only in Day to Day life but also in Research and Development.

IND 106

TOLL LIKE RECEPTORS – PHARMACOLOGICAL APPLICATIONS

V. Manjusha,

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A phylogenetically conserved family of receptors of innate immune system helps in sensing the invading microorganisms. Toll like receptors (TLR) are one of the important class of such receptors. TLR are type I transmembrane proteins characterized by an intracellular Toll/IL 1 receptor homology domain that are expressed by innate immune cells (dendritic cells, macrophages, NK cells), cells of the adaptive immunity (T and B lymphocytes) and non immune cells (epithelial and endothelial cells, fibroblasts). They play an important role in the detection of invading pathogens within the body and subsequent immune response. When activated, TLRs recruit adapter molecules within the cytoplasm of cells in order to propagate a signal. Differential utilization of adaptors provides specificity to individual TLRs-mediated signaling pathway. The aim of this review is to summarize the potential pharmacological applications of this novel class of receptors.

IND 107

TITLE: USAGE OF WATER THROUGH EXOTHERMIC REACTIONS

S.Jyothi

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Depending upon the heat exchange, reactions are of two types namely Endothermic and Exothermic reactions. Endothermic reaction is a chemical reaction that absorbs energy from the surroundings. Exothermic reaction is a chemical reaction that releases energy in the form of heat to the surroundings. As hot water is most widely used substance, raw material or ingredient in the production, processing and formulation of compendial articles in many pharmaceutical industries; Boiler is a device that converts the chemical energy of a fuel into a useful output such as stream or hot water. The fuel type most commonly used is the gas. Operation of these boilers is energy intensive and can therefore represent a significant proportion of an organization energy costs. If we carry out an exothermic reaction in such a way that, the water as the surrounding medium, the liberated heat converts the normal water to hot water or otherwise the conversion of heat releasing substances into a dosage form that is convenient for usage such as tablets or capsules, the production of hot water become easy by simply dissolving the tablet in a suitable amount of water.

IND 108

HOW WOULD PHARMACY PROFESSIONALS BRIDGE THE GAP BETWEEN PHYSICIAN AND PATIENT?

M.Mounika, Labeeba fatima, P.sneha, Kiranmai M, Madhuri M
Sree Dattha Institute of Pharmacy

As now a day's patients may not get adequate information regarding their disease which could lead to more complications in their illness i.e. (secondary complications) due to inappropriate dose, drug interactions, side effects and toxicities. As per U.S 2011 studies, they have estimated that rate of mortality due to low medication adherence in past decade is one billion around the world which is still growing. As patients are unaware of secondary complications caused by drugs which is usually and unfortunately neglected and could lead to increase in morbidity and mortality. Now comes the role of pharmacy professionals which can fill the gap between physician and patient to promote better health of the society. Pharmacy professionals should have an authority to vigilance over prescription. They can educate the patient or patient care taker by providing information regarding their medications to avoid non compliance. They should collect, discuss and maintain patient data and can give their active participation in social welfare. Main aim of pharmacy professional is medication adherence. Low medication adherence imposes a significant financial burden on individual patient's and health care system as a whole. They should be updating their knowledge with newer studies and research which eases monitoring medications. We conclude that if pharmacy professionals are dedicated and give a part of their knowledge they can increase the quality of life. If they get opportunity to practice pharmacy in hospitals and clinics; and if they get chance to question the prescription given by doctors, they may change the present scenario of single directional health care system and to some extent we can be placed in standalone position in maintaining social well being.

IND 109

TARGETED RETINAL DRUG DELIVARY WITH WIRELESS MAGNETIC MICROBOTS

Dornala Divya
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Retinal vein occlusion (RTO) is an obstruction of blood flow due to clot formation in the retinal vasculature, and is among the most common causes of vision loss. Our eyeballs are some of our more delicate organs, and the mere thought of them having to be sliced open for surgery is unsettling. So researches have created magnetically-guided microbots, barely larger than a few human hairs, that can be embedded in the eye and externally controlled to perform delicate surgery without any part of the patient having to be sliced open. Currently, the most promising therapy involves injection of t-PA (tissue plasminogen activator) directly into small and delicate retinal vessels. This procedure requires surgical skills at the limits of human performance. In this, targeted retinal drug delivery with wireless magnetic microrobots is proposed. We focus on four fundamental issues involved in the development of such a system: biocompatible coating of magnetic microrobots, diffusion-based drug delivery, and characterization of forces needed to puncture retinal veins, and wireless magnetic force generation. We conclude that targeted drug delivery with magnetic microrobots is feasible from an engineering perspective, and the idea should now be explored for clinical efficacy.

IND 110

GENETIC POLYMORPHISM

Sheryl Andrews, Department of Pharmaceutical Analysis and Quality Assurance,

G. Pulla Reddy College Of Pharmacy, Hyderabad, Andhra Pradesh (INDIA).

A disease or a disorder may be caused due to an increased or decreased level of a hormone or enzyme and most of the drugs these days are being targeted only to either increase or decrease that particular hormone or enzyme upto an optimum level as required. However there are chances of recurrence of the same disease once the medication is stopped along with the various side effects that one has to bear during the treatment. Genes that are present in our body are actually responsible for any variation that is occurring. So, if the gene responsible for causing a particular disease or a variation that is not desirable is identified then the defective gene can be corrected thereby curing the person of the disease. The treatment is thus more specific and selective with absolutely little or no chance of recurrence of the disease and thus relieving the patients of the numerous side effects associated with the prolonged usage of drugs, especially in chronic conditions like diabetes. Another point of interest here is that when a drug in the same dose in the same dosage form is administered to two patients, the response shown by the subjects are not the same. One may show the desired positive response whereas the other may experience adverse drug reaction. This difference in the behaviour towards the medication by the patients can also be attributed to their different genetic makeup. Drugs have been developed and dosage regimen prescribed under the old paradigm that ‘one dose fits all’. But the fact that all humans are genetically different results in inter-individual differences or variability in efficacy of drugs and disease susceptibility. Thus by treating one’s genes and by individualizing the drug therapy, a new era in the field of medicine can be established to relieve mankind of various sickness and diseases.

PHARMACEUTICS

MCE 101

FORMULATION AND EVALUATION OF RIBOFLAVIN FLOATING MICROBALLOONS

Sheryl Andrews*, E. Saritha, S.Laxmi Prasanna

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Riboflavin or vitamin B2 is an easily absorbed, water-soluble micronutrient used for the treatment of ariboflavinosis having short elimination half-life of 66 to 84 min. The marketed dose of riboflavin is much higher than that which is actually required. This increase in the marketed dose can be attributed to the short half life of riboflavin. Floating drug delivery system is one of the novel drug delivery system. Floating drug delivery system have a bulk density less than gastric fluids and thus it remains buoyant in the stomach without affecting gastric emptying rate for a prolonged period of time. Floating microspheres of Riboflavin were prepared by Emulsion solvent evaporation method by using HPMC K4M, HPMC K15M, HPMC K100M, Ethyl cellulose as polymers. The floating microspheres were evaluated for micromeritic properties, particle size, percentage yield, in vitro buoyancy, incorporation efficiency, drug polymer compatibility (IR study), scanning electron microscopy and in-vitro drug release. Results show that as the concentration of the polymer increases, it affects the particle size, percentage yield, in-vitro buoyancy and in-vitro drug release of microspheres. The micromeritic properties were found to be good and scanning electron microscopy confirmed their hollow structure with smooth surface. The data obtained in this study proves that floating microspheres of riboflavin are promising, potential candidates for safe and effective sustained drug delivery, which can reduce the dosing frequency.

MCE 102

CO-PROCESSED EXCIPIENTS – A NOVEL APPROACH

Naheed Begum

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Single-component excipients do not always provide the requisite performance to allow certain active pharmaceutical ingredients to be formulated adequately. In addition to this the cost involved in development of new chemical excipients with improved properties is quite high.Hence to justify the high rise in new drug development and high industrial output demand, new combinations of existing excipients are an interesting option for improving excipient functionality now-a-days. IPEC definition of a co-processed excipient is a combination of two or more compendial or non-compendial excipients designed to physically modify their properties in a manner not achievable by simple physical mixing and "without significant chemical change " presenting a much lower regulatory burden for adoption than the introduction of a new chemical entity. The objective of which is to provide a synergy of functionality improvements as well as masking the undesirable properties of individual existing excipients. The co-processing methods includes Granulation, Spray Drying, Solvent Evaporation , Crystallization, Melt Extrusion etc. Co-processing results in Improved Flow Properties and compressibility, Better dilution potential etc. Marketed co-processed excipients are Ludipress, Avicel, dipacprosolv etc. Co-processed excipients are the trend to introduce new functionalities and minimize variability with minimum data burden of full safety evaluation.

MCE 103

INNOVATIONS IN CAPSULE TECHNOLOGY

Safura Ayesha Mujeeb

There are two way approach for capsule dosage form innovation in capsule shell and innovation in capsule system such as Coni-Snap Hard Gelatin Capsules, Vcaps & Vcaps Plus Capsules, Plantcaps Capsules, oceancaps Fish Gelatin Capsules,Pearlcaps Pearlescent Capsules,Press-Fit & Xpress-Fit Gelcaps, dbcaps Capsules, pccaps Capsules, Licaps Capsules, sgcaps Soft Gelatin Capsules, drcaps Capsules,DUOCAP Capsules,Solid Lipid Pellet Technology etc. novel technologies such as capsule-in-a-capsule technology, tablet-in-a-tablet technology and tablet-in-a-capsule technology. The development of new generation of capsules are beneficial for night time dosing and for the drugs having high first pass effect and having specific site of absorption in Gastrointestinal tract.

MCE 104

SUPERDISINTEGRANTS: A RECENT INVESTIGATION AND CURRENT APPROACH

G. Usha Rani

G Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad.

The desire of improved palatability in orally administered products has prompted the development of numerous formulations with improved performance and acceptability. Orally disintegrating tablets are an emerging trend in novel drug delivery system and have received ever-increasing demand during the last few decades. Superdisintegrants are used to improve the efficacy of solid dosage forms. This is achieved by decreasing the disintegration time which in turn enhances drug dissolution rate. Disintegrants are substances or mixture of substances added the drug formulation that facilitates the breakup or disintegration of tablet or capsule content into smaller particles that dissolve more rapidly than in the absence of disintegrants. In recent years, several newer agents have been developed known as Superdisintegrants. Diverse categories of Superdisintegrants such as synthetic, semi-synthetic, natural and co processed blends etc. have been employed to develop effectual mouth dissolving tablets and to overcome the limitations of conventional tablet dosage form. Superdisintegrants are generally used at a low level in the solid dosage form, typically 1- 10 % by weight relative to the total weight of the dosage unit. The present study comprises the various kinds of Superdisintegrants which are being used in the formulation to provide the safer, effective drug delivery with patient's compliance.

MCE 105

FAST DISSOLVING TABLET OF PARACETAMOL

G Priyanka,

G Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad

Mouth dissolving tablets are disintegrating and dissolve rapidly in the saliva without the need for water. Some tablets are designed to dissolve in saliva remarkably fast, within a few seconds, and are true fast dissolving tablets. Paracetamol is a potent anti-inflammatory analgesic agent indicated for acute and chronic treatment of rheumatoid arthritis and osteo arthritis. The present study focuses on the development of the mouth dissolving tablet of paracetamol designed as tablets using three techniques viz, effervescent agents, superdisintegrants and combination of effervescent agents and superdisintegrant and the study of influence of these techniques on the in vitro dispersion time of the tablets. Paracetamol an anti-pyretic drug was chosen as the model drug candidate with dose 125mg. Effervescent agents like citric acid, tartaric acid and sodium bicarbonate and super disintegrants like sodium starch glycolate were used. The developed mouth dissolved tablets were evaluated for standard tablet properties. Tablets were evaluated for hardness, friability, weight variation, thickness, disintegration time and wetting time.

MCE 106

A REVIEW ON IONTOPHORESIS

Naveen Kumar Guntoju* Dr. K. Latha.

G Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad

Paul Ehrlich has introduced the concept of targeted drug delivery. Apart from conventional oral drug delivery other routes of administration have also developed, Transdermal drug delivery system is a route of administration where drug is administered on superficial skin or surgically below skin. Different gel formulations of transdermal drug delivery were developed recently transdermal delivery with the use of iontophoretic technique is developed where a small amount of electricity is used for improvement of absorption of polar drug, drugs with high molecular weights. It is physical method of drug administration & follows controlled release. Potential difference is created by use of external power source which improves the transport of ionic and neutral drug species across the skin.

MCE 107

PHARMACOSOMES AS A NOVEL VESICULAR DRUG DELIVERY SYSTEM

Sujitha. B,

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Pharmacosomes are amphiphilic lipid vesicular systems that have shown their potential in improving the bio- availability of poorly water soluble as well as poorly lipophilic drugs.They are called so because the system is formed by linking a drug (pharmakon) to a carrier (soma), they are called pharmacosomes hence the expression "vesicular constructs" in common for pharmacosomes, liposomes, niosomes, and biosomes. They are the colloidal dispersions of drugs covalently bound to lipids. Pharmacosomes impart better biopharmaceutical properties to the drug, resulting in improved bioavailability. Their very small size and unique properties such as amphiphilicity, active loading of drugs, high and predetermined entrapment efficiency, stability make them an appropriate carrier for delivering drugs with precision and selectivity. Pharmacosomes have been prepared for various non-steroidal anti-inflammatory drugs, proteins, cardiovascular and antineoplastic drugs. Developing the pharmacosomes of the drugs has been found to improve the absorption and minimize the gastrointestinal toxicity and it also reduces the drug leakage and enhances the therapeutic efficacy. Pharmacosomes are like a panacea for most of the problems associated with liposomes, transferosomes, niosomes, and so forth. This approach as a drug delivery system certainly promises a reliable, safe, selective and precise method of drug delivery.

MCE 108

VESICULAR CARRIERS FOR ENHANCING TRANSDERMAL PERMEATION OF ALFUZOSIN HYDROCHLORIDE

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The objective of the present study is to develop and evaluate the alfuzosin hydrochloride (AH) loaded transferosomes in comparison to conventional liposomes and cationic flexosomes .it was investigated by encapsulating the drug in three formulations, prepared by thin film hydration method and evaluated for particle size, zetapotential, entrapment efficiency, stability, in vitro diffusion and ex vivo permeation studies. the vesicle size for optimized liposomes(LA10), transferosomes(TA8),and cationic flexosomes(FA2)was 80.9nm, 149.5nm, and 119.9nm respectively, zeta potential was found to be negative,-23.0mv and -6.9mv for liposomes and transferosomes, positive, 14.5mv for cationic flexosomes. Cationic flexosomes, FA1 with stearylamine and span 80 of 95:5%w/w of PC: EA Showed maximum entrapment (83.75±0.67%) than transferosomes (68.84%±0.68%) and liposomes (48.94%±1.5%) .In vitro diffusion and Ex vivo permeation studies were conducted using a Franz diffusion cells. Transferosomes of TA8 with tween 80 of 85:15% of PC: EA showed maximum transdermal flux (17.6±0.87µg/cm^2/hr). By comparing three vesicular formulations cationic flexosomes(FA2) showed maximum permeation of Q24 (335.7±1.98(µg/cm^2), transdermal flux(23.28±0.91µg/cm^2/hr), lag time(0.41±0.22hrs), permeability coefficients(4.65±0.006×$10^{-3}$$cm^2$/hr),skin content(52.21±10.5µg/g), and transdermal flux was enhanced by 5.87 times over drug solution. Vesicle skin irritation studies showed irritation potential of '0', thus providing to be non irritant. The formulation s were stable at 4^0c for 120 days. Results suggested, among three vesicular formulations,cationic flexosomes as efficient carriers for AH transdermal delivery.

MCE 109

ORGANOGELS: Preparation and applications in drug delivery

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Organogels are semi solid preparations regarded as a viscoelastic system,which has immobilised external apolar phase.The apolar phase gets immobilised with in spaces of three dimensional networked structure formed due to physical interactions amongnst the self assembled structures of compounds regarded as gelators.Various types of gelators are used in the preparation of organogel like 4-tertbutyl-1-aryl cyclohexanols derivative organo gelators,polymeric organo gelators,gemini organo gelators.These organogels have found tremendous use in pharmaceutical,food and cosmetic industries.Various organogel-based formulations have been designed to administer the bio-active agents by different routes of administration.

MCE 110

A REVIEW ON BILAYER FLOATING TABLETS

Manoj Kumar Y,

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In contrast to conventional single layer tablets multilayer tablets are advantageous in case of administering incompatible drugs, multiple drugs in combinations, etc,. Bilayer tablets can also be used to formulate a immediate release layer and a sustained release layer of drugs. Matrix systems are used to control or sustain the release of the drug. Recently one of the layer in bilayer tablets is made as floating layer and made to retain the dosage form in the stomach. Drugs with absorption window in stomach can be formulated as bilayer floating tablets. Different polymers like HPMC, EC, PEG, CMC, sod. CMC, Natural gums can be used for matrixing, super disintegrants are used for immediate release, different binders like pvp, starch can be used, sodium bicarbonate and citric acid are used as gas generating agents.

MCE 111

TRANSFEROSOMES AS A CARRIER OF TRANSDERMAL DRUG DELIVERY SYSTEM.

M.Sarika

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Liposomes and Niosomes are the vesicular carrier systems which have received a lot of attention over the last decade as a means of transdermal drug delivery, but there are some problems like poor skin permeability, breaking of vesicles, and leakage of drug, aggregation and fusion of vesicles. To overcome these problems a new type of carrier system called "Transferosomes" was introduced for the effective transdermal delivery of number of low and high molecular weight drugs. Vesicular systems have been realized as extremely useful carrier systems in various scientific domains. Over the years, vesicular systems have been investigated as a major drug delivery system due to their flexibility to be tailored for varied desirable purposes. Transferosomes are specially optimized vesicles which can respond to an external stress by rapid and energetically inexpensive shape transformation. Such highly deformable particles can thus be used to bring drug across the biological permeability barriers such as the skin.

MCE 112

SELF-EMULSIFYING DRUG DELIVERY SYSTEM

P.Ramya

G Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad

Self-emulsifying drug delivery systems (SEDDS) are mixtures of oils and surfactants, ideally isotropic, sometimes including cosolvents, which emulsify under conditions of gentle agitation, similar to those which would be encountered in the gastro-intestinal tract. Hydrophobic drugs can often be dissolved in SEDDS allowing them to be encapsulated as unit dosage forms for peroral administration. When such a formulation is released into the lumen of the gut it disperses to form a fine emulsion, so that the drug remains in solution in the gut, avoiding the dissolution step which frequently limits the rate of absorption of hydrophobic drugs from the crystalline state. Generally this can lead to improved bioavailability, and/or a more consistent temporal profile of absorption from the gut. Ultra-low oil-water interfacial tension and/or substantial interfacial disruption are required to achieve self-emulsification. SEDDS are usually formulated with triglyceride oils and ethoxylated nonionic surfactants, usually at surfactant concentrations greater than 25%. In practice, disruption of the oil-water interface is caused by penetration of water into the formulation or diffusion of cosolvents away from the formulation. Both of these phenomena can be studied using equilibrium phase diagrams, which in combination with particle size measurements allow the optimisation of performance of SEDDS. The precise mechanisms of emulsification remain the subject of speculation but there is an empirical link between self-emulsification, liquid crystal formation, oil-water phase-inversion temperature and enhanced solubilization of water by oily formulations, and these phenomena are indicators of the efficiency of emulsification.

BCE 101

LIPOSOMES FOR ANTI-CANCER DRUG DELIVERY

Priyanka.V

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Liposomes spherical structures made up of lipid bilayer in which drugs are encapsulated at different locations depending on the solubility of anti-cancer drugs. Various types of ligands such as polyethyleneglycol, monoclonal anti-bodies, vitamins etc are attached on the surface of liposomes that improve efficacy and reduce toxicity of anti-cancer drugs. New types of liposomes such as thermo sensitive, pH sensitive etc are currently in various stages of clinical development. Commercially available liposomal formulations of anti-cancer drugs have been used to treat various types of cancers. This novel drug delivery system has potential applications in the treatment of other acute and chronic diseases. The methods of manufacture of liposomes have been standardised using high pressure homoginizers and extrusion technology. Anti-cancer drugs are either entrapped during the formation or later into empty liposomes by remote loading technique. The lipids used in the production of liposomes are part of human body and hence do not pose any safety issue. The critical quality attributes of liposomes are size, zeta potential, surface hydrophilicity, type of ligand attached on the liposome surface etc. Passive targeting of liposomes is achieved by making liposomal surface highly hydrophilic (eg: polyethyleneglycol- ligand) that increases circulation time in the body by avoiding phagocytosis. Active targeting with liposomes is achieved using specific ligands on surface of liposomes that bind to receptor on tumours and enter into the tumour by endocytosis and kills only cancer cells.

BCE 102

MUCOADHESIVES AS DRUG DELIVERY SYSTEM.

B.Swathi

Rbvrr Womens College Of Pharmacy, Hyderabad

Mucoadhesive drug delivery systems have huge potential of being an alternative to the conventional dosage forms used for both local and systemic treatment of diseases. Current use of mucoadhesive polymer is to increase contact time for wide range of drugs & route of administration has shown dramatic improvement in specific therapies & more general patient compliance, increased residence time of drug at site of action & low enzymatic activity. Similarly several drugs can be formulated as mucoadhesive systems to enhance their bioavailability, with the usage of appropriate mucoadhesive polymers. Hence mucodhesive polymers can be used as means of improving drug delivery through different routes like G.I.T, nasal, ocular, vaginal & rectal administration.

BCE 103

NEEDLE FREE INJECTIONS TECHNOLOGY

Seema Farheen*; M. Kavitha rani ; M.Ramesh.

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Needle free injections systems are novel ways to introduce various medicines in to patients without piercing the skin with a conventional needle. This technology offers the very obvious benefit of reducing patient concern about the use of needle. Needle free injection gives very effective route of administration for a wide range of drugs which has more bio equivalency than needles, results in less pain and is strongly preferred by patients. The needle free systems that are most like traditional injections involve the direct transfer of the medicine through the skin. The devices propel a small jet of liquid or powder at high speed, causing it to penetrate the skin for subcutaneous, intra dermal or intramuscular administration but not for intra venous administration. These devices have been used for mass vaccinations since a number of years. However, only recently they are being promoted as devices for the self administration of parenteral drugs. Additional benefits include very fast injection compared with conventional needles and no needle disposal issues. Not only, it can benefit the pharmaceutical industry in increasing product sale, it has the added potential to increase compliance with dosage regimens and improved outcomes medicine with more efficient and less painful.

BCE 104

ROLE OF NANOTECHNOLOGY IN CANCER TREATMENT.

Jayanthi M

G Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad

The application of nanotechnology for cancer therapy has received considerable attention in recent years. Cancer nanotechnology (an interdisciplinary area of research in science, engineering and medicine) is an upcoming field with extensive applications. It provides a unique approach and comprehensive technology against cancer through early diagnosis, prediction, prevention, personalized therapy and medicine. Target-specific drug therapy and methods for early diagnosis of pathologies are the priority research areas in which nanotechnology would play a vital part. This review focuses on the approaches of cancer nanotechnology in the advancement of cancer therapy.

BCE 105

INSULIN THERAPIES: CURRENT AND FUTURE TRENDS AT DAWN

S.Srivalli

St. Mary's College Of Pharmacy, Secundrabad.

Insulin is a key player in the control of hyperglycemia for type 1 diabetes patients and selective individuals in patients of type 2 diabetes. Insulin delivery systems that are currently available for the administration of insulin include insulin syringes, insulin infusion pumps, jet injectors and pens. The traditional and most predictable method for the administration of insulin is by subcutaneous injections. The major drawback of current forms of insulin therapy is their invasive nature. To decrease the suffering, the use of supersonic injectors, infusion pumps, sharp needles and pens has been adopted. Such invasive and intensive techniques have spurred the search for alternative, more acceptable methods for administering insulin. Several non-invasive approaches for insulin delivery are being pursued. The newer methods explored include the artificial pancreas with closed-loop system, transdermal insulin, and buccal, oral and pulmonary routes. This review focuses on the new concepts that are being explored for use in future.

BCE 106

NANOFIBERS AND THEIR APPLICATIONS IN TISSUE ENGINEERING

Manimala Ranga

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Developing scaffolds that mimic the architecture of tissue at the nanoscale is one of the major challenges in the field of tissue engineering. The development of nanofibers has greatly enhanced the scope for fabricating scaffolds that can potentially meet this challenge. Currently, there are three techniques available for the synthesis of nanofibers: electrospinning, self-assembly, and phase separation. Of these techniques, electrospinning is the most widely studied technique and has also demonstrated the most promising results in terms of tissue engineering applications. The availability of a wide range of natural and synthetic biomaterials has broadened the scope for development of nanofibrous scaffolds, especially using the electrospinning technique. The three dimensional synthetic biodegradable scaffolds designed using nanofibers serve as an excellent framework for cell adhesion, proliferation, and differentiation. Therefore, nanofibers, irrespective of their method of synthesis, have been used as scaffolds for musculoskeletal tissue engineering (including bone, cartilage, ligament, and skeletal muscle), skin tissue engineering, vascular tissue engineering, neural tissue engineering, and as carriers for the controlled delivery of drugs, proteins, and DNA. This review summarizes the currently available techniques for nanofiber synthesis and discusses the use of nanofibers in tissue engineering and drug delivery applications.

BCE 107

BILAYER FLOATING TABLETS FOR GASTRORETENTIVE DRUG DELIVERY SYSTEM

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Oral delivery of drug is by far the most preferable route of drug delivery due to the ease of administration, patient compliance and flexibility in the formulation but has drawback of non-site specificity and short gastric resident time. In recent years scientific and technological advancements have been made in the development of novel drug delivery systems by overcoming physiological troubles such as short gastric residence time and unpredictable gastric emptying times. Among several approaches of floating systems, bilayer floating technology and floating mechanism. The combined principle of bilayer floating tablet helps to release initial dose from the immediate release layer to reach the plasma concentration and then the floating layer absorb gastric fluid forming an impermeable colloidal gel barrier on it surface, maintains a bulk density less than unity and there by remains buoyant in stomach providing steady state concentration of drug in system.

BCE 108

CHEMICAL PENETRATION ENHENCERS FOR TRANSDERMAL DRUG DELIVERY SYSTEMS

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Delivery of the drug via skin would provide a useful alternative to oral route and important site of drug application for local and systemic effects with minimum undesirable side effects. Skin penetration techniques have been developed to improve bioavailability and enhance the range of drugs for which transdermal delivery is a viable option. The permeation of drug through skin can be enhanced by chemical penetration enhancers. The present review article includes the classification of permeation enhancers and their mechanism of action; thus it will help in the selection of suitable penetration enhancer for improving the permeation of poorly absorbed drugs via transdermal route.

BCE 109

PULSATILE DRUG DELIVERY SYSTEM

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The purpose for this review on Pulsatile Drug Delivery System (PDDS) is to compile the recent literatures with special focus on different types and approaches involved in the development of formulations. Pulsatile drug delivery system is the most interesting time and site specific system. Diseases wherein PDDS are promising include asthma, peptic ulcer, cardiovascular diseases, arthritis, attention deficit syndrome in children, hypercholesterolemia. PDDS can be classified into time controlled systems wherein the drug release is controlled primarily by the delivery system; stimuli induced PDDS in which release is controlled by the stimuli, like the p H or enzymes present in the intestinal tract or enzymes present in drug delivery systems and externally regulated systems where release is programmed by external stimuli like magnetism, ultra sound, electrical effect and irradiation. Marketed products like Pulsicap, Ritalin and Pulsys are based on pulsatile release system. The aim of this review is to describe several types of drug delivery systems. This review also summarizes some current PDDS already available in the market. These systems are useful to several problems encountered during the development of pharmaceutical dosage form.

BCE 110

ETHOSOMES-AN OPTIMISTIC APPROACH FOR TRANSDERMAL DRUG DELIVERY

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The dermal route has been recognized as one of the highly potential routes of systemic drug delivery and provides the advantage of avoidance of the first pass effect, ease of use and withdrawal (in case of side effects), and better patient compliance. The main barrier of the skin is located within its uppermost layer, the stratum cornea. Several approaches have been developed to weaken this skin barrier. One of the approaches for increasing the skin penetration of drugs and many cosmetic chemicals is the use of vesicular systems, such as ethosomes. Ethosomes are phospholipids-based elastic nanovesicles containing a high content of ethanol (20–45%). Over the year it has showed promising result in comparison to oral drug delivery system as it eliminates gastrointestinal interferences and first pass metabolism of the drug. Ethosomes have higher penetration rate through the skin as compared to liposomes. The increased permeation of ethosomes is probably due to its ethanolic content. Ethosomes provides a number of important benefits such as improved drug delivery, efficacy, patient compliance and comfort. Hot and cold methods are used for formulation of ethosomes. Evaluation parameters include size, shape, drug content, zeta potential etc. Therefore, ethososmes are the promising carriers of the transdermal drug delivery and one of the strong contenders in the field of Novel Drug Delivery System.

BCE 111

PHARMACOSOMES

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Pharmacosomes is a novel lipid based drug delivery system. These are colloidal dispersions of drugs covalently bound to the phospholipids. They may exist in three different forms- ultrafine vesicular, micellar or hexagonal, depending upon the chemical structure of the drug-lipid complex. It has many advantages like small size and unique properties such as amphiphilicity, high entrapment efficiency and stability. Moreover, it helps in increasing bioavailability, reduce cost of therapy and provide controlled as well as targeted release of drug. Bearing the above mentioned characteristics, pharmacosomes positions an upper edge over other drug delivery systems. Not only has it caused a reduction in drug leakage and toxicity, but has also increased the therapeutic efficacy. This drug delivery system is promising enough for various classes of drugs like non-steroidal, anti-inflammatory , cardiovascular ,anti-neoplastic and proteins.

BCE 112

APPLICATION OF MESOPOROUS SILICA PARTICLES IN NANO DRUG DELIVERY SYSTE

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Mesoporous silica is a form of silica and a recent development in nanotelechnology. A procedure for producing mesoporous silica was patented around 1970. It went almost unnoticed and was reproduced in 1997. MSN's were independently synthesised in 1990 in Japan. MSN's are synthesised by reacting Tetraethyl Orthosilicate with a template made of micellar rods. The result is a collection of nano-sized spheres of rods that are filled with regular arrangement of pores. Another technique to synthesise is using a simple sol-gel method or a spray drying method. Tetraethyl Orthosilicate is also used with an additional polmer. The functionalisation of MSP with organic moieties or other nanostructures brings controlled release and molecular recognition compatibilities to these nanomaterials for drug/gene delivering and sensing applications respectively. The large surface area of pores allows particles to be filled with a drug or cytotoxin. Like a trojan horse, the particles will be taken up by certain biological cells through endocytosis depending on what chemicals are attached outside of spheres. The structure of these particles allows them to be filled with fluorescent dye that unables to pass through cell walls. When MSNs are added to a cell culture, they carry the dye across cell membrane. Since they are optically transparent the dye can be seen through silica walls. The types of molecules granted outside MSNs will control the kind of biomolecules allowed to interact with dye.

BCE 113

ADVANCES IN GRDDS: RAFT FORMING SYSTEM A REVIEW

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In recent years several advancements has been made in research and development of Gastro retentive drug delivery system to overcome the drawback of non-site specificity when drug administered orally. In order to understand various physiological difficulties to achieve gastric retention, we have summarized important factors controlling gastric retention time. We have reviewed various gastro retentive approaches designed and developed until now i.e. floating drug dosage systems (FDDS), swelling or expanding systems, mucoadhesive systems, high density system, Raft forming system, magnetic systems. Among these systems, the review summarizes the special focus on raft forming approach which comes under floating drug delivery system. Raft system incorporates alginate gels which have carbonate components react with gastric acid causes bubbles and this enables floating. Finally, Evaluation, advantages, disadvantages, future potential and marketed preparation of raft forming approach in gastro retentive drug delivery systems were covered.

BCE 114

RECENT TRENDS IN TRANSDERMAL DRUG DELIVERY SYSTEM

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Transdermal drug delivery systems are topically administered medicaments in the form of patches (or semisolids) that deliver drug for systemic effects at predetermined and controlled rate. It reduces intensity of action of drug release and thus reduces side effects associated with its oral therapy. Transdermal delivery provides a leading edge over injectables and oral routes by increasing patient compliance and avoiding first pass metabolism respectively. This article reviews about the recent and current trends in tdds like DOT matrix technology, skin contact acutated pump and pain free diabetic monitoring. It also reviews about the commercial products like nicoderm , nicotinell, transderm-scop and Estraderm.

BCE 115

NANOPARTICLES AS DRUG DELIVERY SYSTEMS

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With the emergence of nanotechnology researchers are now interested in nanoparticles. Nanoparticles can be defined as particles less than 100nm in diameter that exhibit new or enhanced size-dependent properties compared with larger particles of the same material. They play an important role in drug delivery systems. A nanoparticle has emerged as a promising strategy for the efficient delivery of drugs used for the treatment of some diseases by specific targeting. Attachment of other molecules with nanoparticles will enhance the delivery of therapeutic drugs. Example are Ethylene glycol and Hydrogels. Polymer of nanoparticles that reaches the site of inflamed tissue in case of arterial plague. They dissolve releasing drugs in the presence of hydrogen peroxide that is present in the inflamed tissue. Proteins derived from the stem cells to prevent aging of the skin. These proteins are encapsulated in liposome nanoparticles which merge with the membranes of skin cells to allow delivery of the proteins. Another added advantage of these particles is the ease of penetration of nanoparticles into the mucus that have provided the capability to coat the lung tissue with therapeutic drugs. Biocapsule, a special type of nanoparticle which will help in the detection of change in the biochemistry of blood and also reduces the effect of radiation. This is commonly observed in astronaut in space. Another important nanoparticles are liposomes. Liposomes provide inspired route for multifunctional targeted therapeutics action. Hence nanoparticles play an important role to make drug delivery simple & effective

BCE 116

NANOSPONGE DRUG DELIVERY SYSTEM

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Nanotechnology has been receiving considerable appreciations for discovery, drug deliveries, diagnosis and treatment of diseases. A separate branch known as Nano medicine has been established for its usage. Due to decreased bioavailability, drugs show in-vitro but lack in-vivo actions. Many branches have emerged from Nano medicine such as, nanosuspensions, nanoemulsions, nanosponges etc. Nanosponge is an advanced drug delivery system used to increase bioavailability. They soak up toxins present in blood, tissues etc. They offer wide variety of advantages such as, increased predictability of drug release, usage of hydrophobic drugs, increased solubility and simple. Various methods of development are present which can be used. Evaluation can also be done by zeta potential, particle size analysis, polydispersity index etc. They are majorly used in cancer research, chromatography, water purification, removal of oil spills etc. they can also be used in early detection and diagnosis of disease personalized therapy and drug delivery. Most recently, it has been used as a vaccine to Methicillin resistant Staphylococcus aureus (MRSA). Hence it can be used in drug resistance case.

BCE 117

FILTERATION TECHNIQUES AND ITS APPLICATION

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Filteration concept,mechanisim and factors affecting filteration process,types of filter aids ,objectives of filter aids, classification of filters used pharmaceutically,advantages and disadvantages of filters, applications of filters in extraction of drugs from vegetables for improving appearance of solutions or other solutions used orally,removal of irritants in opthalmic preparations, detection of microorganisims, increasing efficiency of preservatives.Filters that are used for large scale and small scale industries.

BCE 118

TABLET COATING AND RECENT ADVANCES IN TABLET COATING

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Solid dosage forms are coated for number of reasons, the most important of which is control release profile of active ingredient and its bioavailability. The amount of coating is critical for an effective oral dosage forms. Tablets are usually coated in horizontal coating pans with the coating sprayed on the free surface of the tablet bed. Tablets must have a coating mass that lies within the range with very little inter and intra tablet coating variability. Using Discrete Element Method(DEM),tablet coating can stimulated on the computer.Other recent techniques include Electrostatic Dry Coating(EDC),Magnetically Assisted Impaction Coating(MAIC), Aqueous Film Coating Technology(AFCT),Super Cell Coating Technology(SCT).

BCE 119

MICRONEEDLE-BASED DRUG DELIVERY SYSTEM FOR TRANSDERMAL ROUTE

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Transdermal delivery offers an attractive, noninvasive administration route but it is limited by the skin's barrier to penetration. Minimally invasive techniques, such as the use of microneedles (MNs), bypass the stratum corneum (SC) barrier to permit the drug's direct access to the viable epidermis. These novel micro devices have been developed to puncture the skin for the transdermal delivery of hydrophilic drugs and macromolecules, including peptides, DNA and other molecules, that would otherwise have difficulty passing the outermost layer of the skin, the SC. Using the tools of the microelectronics industry, MNs have been fabricated with a range of sizes, shapes and materials. MNs have been shown to be robust enough to penetrate the skin and dramatically increase the skin permeability of several drugs. Moreover, MNs have reduced needle insertion pain and tissue trauma and provided controlled delivery across the skin. This review focuses on the current state of the art in the transdermal delivery of drugs using various types of MNs and developments in the field of microscale devices, as well as examples of their uses and clinical safety.

BCE 120

TRANSDERMAL DRUG DELIVERY SYSTEMS

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Transdermal drug delivery systems are prepared with an aim of achieving systemic medication through topical application to intact skin surface. These are topically administered medicaments in the form of patches or semisolids (gels) that deliver for systemic effects at a predetermined rate and controlled rate. The major penetration pathway of drug molecules is the stratum corneum of intact human skin by diffusing through lipid envelopes of skin cells.

BCE 121

LIPOSOMES

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Liposomes were first described by british hametologist ALCED bangham in 1961 at Babraham institute in Cambridge. The word liposome derives from two greek words lipo ["fat"] and soma ["body"] it is so named because its composition is primarily of phospholipid and may contain small amount of other molecules. A liposome is an artificially-prepared vesicle composed of lipid bilayer. the liposomes can be used as a vehicle for administration of nutrients and pharmaceutical drugs.liposomes can be prepared by disrupting biological membranes (such as sonication). liposomes are often composed of phosphatidylcholine-enriched phospholipids and may also contain mixed lipid chains with surfactant properties such as egg phosphatidylethanolamine. The major types of liposomes are the multilamellar vesicle (mlv),the small unilamellar vesicle (suv),the large unilamellar vesicle(luv), and the cochleate vesicle. Liposomes should not be confused with micelles and reverse micelles composed of monolayers. Until very recently the use of liposomes were primarily directed as targeted drug delivery. However, the versatile abilities of liposomes are now being discovered in other settings. Liposomes are presently being cleverly implemented for the specific oral delivery of certain dietary and nutritional supplements. Liposomes can also be decorated with opsonins and ligands to activate endocytosis in other cell types. The use of liposomes for transformation or transfection of dna in to host cell is known as lipofection. In addition to gene and drug delivery applications, liposomes can be used as carriers for the delivery of dyes to textiles, pesticides to plants, enzymes and nutritional supplements of foods and cosmetics to the skin.

BCE 122

RECENT TRENDS IN PULSATILE DRUG DELIVERY SYSTEM

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Pulsatile drug delivery systems are gaining a lot of interest and attention these days. These systems have a peculiar mechanism of delivering the drug rapidly and completely after a "lag time," i.e., a period of "no drug release." Though most delivery systems are designed for constant drug release over a prolonged period of time, pulsatile delivery systems are characterized by a programmed drug release, as constant blood levels of a drug may not always be desirable. Pulsatile systems are designed in a manner that the drug is available at the site of action at the right time in the right amount. These systems are beneficial for drugs having high first-pass effect; drugs administered for diseases that follow chronopharmacological behavior; drugs having specific absorption site in GIT, targeting to colon; and cases where night time dosing is required like asthma, peptic ulcer, cardiovascular diseases, arthritis, attention deficit syndrome in children, and hypercholesterolemia. This review will cover methods that have been developed to control drug delivery profile with different polymeric systems like time controlling, internal stimuli induced (temperature induced and chemical stimuli-induced), and external induced (magnetic fields, ultrasound, electric fields and light stimulation) and multiparticulate system. Special attention has been given to time controlled pulsatile drug delivery. Products available as once-a-daily formulation based on Pulsatile release like Pulsincap®, Ritalin®, and Pulsys® are also covered in the review.

BCE 123

NASAL DRUG DELIVERY SYSTEM

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In present era, nasal drug delivery system has been considered as potential and favourable route of drug delivery because it provides patient compliance, easy to administration, bypass first pass metabolism, excellent penetration, low dose required, rapid absorption and gives desirable effects. So many times nasal drug delivery has been considered as alternative of parenteral route. The purpose of this review, to provide a complete information about nasal drug delivery system such as advantage, limitations, anatomy of nose, mechanism of drug absorption, factors affecting of nasal drug delivery, absorption improvement aspects, novel drug formulations, types of nasal drug delivery system with uses of nasal drug delivery in various disease. So we have expectation, that researches and others cited person get benefitted from this review.

BCE 124

LYOPHILIZATION

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Lyophilizationis a process which extracts the water from food and the other products so that the food and the products remains stable and are easier to store at room temperature without being refrigerated. Lyophilization requires the development of a unique recipe or cycle based on the thermal and physical characteristics of the product along with consideration of temperature and pressure relationships, phase changes and heat transfer. The steps involved in freeze drying including product freezing, primary drying (sublimation) and secondary drying (desorption). Common freeze dryer equipment designs are reviewed along with their typical components and sub-systems. It is the technique which is used to increase the shelf life of the products, reducing the weight of the product hence reducing the cost of transportation and maintenance, protecting the thermolabile materials from degradation, sterility can be maintained. Now a days it is applied to the pharmaceutical and technological field and to the food industry (as to produce the essence and flavouring agents) and in the technological industry in the chemical synthesis.

BCE 125

RECENT ADVANCES IN NANOSPONGES AS DRUG DELIVERY SYSTEM

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Major problem of many newly developed chemical entities is their poor solubility in water and pharmakokinetic issues. These poorly water soluble drugs show many problems in formulating them in conventional dosage forms and the critical problem associated is its very low bioavailability. Nanotechnology has attracted increasing attention during recent year and it can resolve the problem associated with solubility and bio-availability .nanosponges are the part of nanotechnology. Nanosponges delivery system which was originally developed for topical delivery of drugs, can also be used for oral delivery of drugs using water soluble and bioerodible polymers.nanosponges are tiny sponges with a size of about a virus , which can be filled with wide variety of drugs .These tiny sponges can circulate around the body until they encounter the specific target site and stick on the surface and begin to release the drug in a controlled and predictable manner. Because the drug can be released at the specific target site instead of circulating throughout the body it will be more effective for specific disease targeted treatment.

BCE 126

NIOSOMES- A NOVEL DRUG DELIVERY SYSTEM

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Niosomes are the non ionic vesicles which act as drug carrier systems. These are the microscopic bi lamellar or multi lamellar structures formed from non ionic surfactant and cholesterol. The niosome vesicle has both hydrophilic and hydrophobic sites. These are chemically stable, biodegradable, biocompatible systems which can encapsulate large amount of active drug in approximately less volumes of vesicles. The method of preparation is based on liposome technology. The dry product form of niosome is pro niosomes which on hydrolysis yields niosome dispersion. Proniosomal gel of the neem seed oil is acceptable for therapeutic applications. The proniosomal gel was prepared using span 40, phosphate buffer, cholesterol, using neem seed oil as active pharmaceutical ingredient. Niosomal drug delivery system is potentially applicable to many pharmacological agents for their action against various diseases.

BCE 127

TRANSDERMAL DRUG DELIVERY SYSTEM

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Transdermal drug delivery system are self contained , self discrete dosage forms , When applied to the intact skin deliver the drug at controlled rate to the systemic circulation & made an important contribution to medical practice , But has yet to fully achieve its potential as an alternative to oral delivery and hypodermic injection. First generation-steady increase in clinical use for delivery of small ,Lipophilic ,low dose drug. Second generation-using chemical enhancers , cavitational ultrasound also results in clinical products. Third generation-effects to skin's barrier layer of stratum corneum micro needles and thermal ablation are currently progressing through clinical-trails for delivery of vaccines(insulin, parathyroid hormone & influenza).

BCE 128

BEE VENOM-LOADED NANOPARTICLES KILL HIV

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Bee venom (BV) allergy is potentially dangerous for allergic individuals because a single bee sting may induce an anaphylactic reaction, eventually leading to death. Currently, venom immunotherapy (VIT) is the only treatment with long-lasting effect for this kind of allergy and its efficiency has been recognized worldwide. This therapy consists of subcutaneous injections of gradually increasing doses of the allergen. This causes patient lack of compliance due to a long time of treatment with a total of 30–80 injections administered over years. In this article we deal with the characterization of different MS-PLGA formulations containing BV proteins for VIT. The PLGA microspheres containing BV represent a strategy to replace the multiple injections, because they can control the solute release. Physical and biochemical methods were used to analyze and characterize their preparation. Microspheres with encapsulation efficiencies of 49–75% were obtained with a BV triphasic release profile. Among them, the MS-PLGA 34 kDa-COOH showed to be best for VIT because they presented a low initial burst (20%) and a slow BV release during lag phase. Furthermore, few conformational changes were observed in the released BV. Above all, the BV remained immunologically recognizable, which means that they could continuously stimulate the immune system. Those microspheres containing BV could replace sequential injections of traditional VIT with the remarkable advantage of reduced number of injections

BCE 129

OLEOGELS-A PROMISING BASE FOR TRANSDERMAL FORMULATIONS

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Oleogels may be defined as lipophilic liquid and solid mixtures, in which solid lipid materials (oleogelators) with lower concentrations (<10 wt.%) can entrap bulk liquid oil by ways of the formation of network of oleogelators in the bulk oil. The oelogelators can be grouped into two: self-assembly system and crystal particles system. This article reviewed recent work on the formation of oleogels using various types of oleogelators. The fundamental aspects of the formation of lipid network, kinetic and microscopic properties of oleogels are discussed with a special emphasis on crystal particle based oleogels. The potential applications of edible oil based-oleogels and their functionality are also described.

BCE 130

GASTRO RETENTIVE DELIVERY OF ITOPRIDE HCL FLOATING BEADS

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A gastro retentive sustained release system of itopride HCL was formulated to increase the gastric residence time and modulate it release behaviour .itopride Hcl is a prokinetic drug used in the treatment of gastro eosophageal reflux disease, non ulcer dyspepsia and as an anti-emetic .it has a primary site of action in stomach and half life of 5-6hours .there fore requires frequent administration of dose. To overcome this to reduce the frequency of administration itopride beads were prepared by emulsion gelation method by employing low methoxy pectin and sodium alginate as sustain release polymers and sunflower oil was used to enable floating property of beads. By conducting various Invitro-Invivo studies it was concluded that these formulations was found to improve the patient compliance, minimize side effects and decrease the frequency of administration.

BCE 131

A REVIEW ON SUBLINGUAL DOSAGE FORM

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Various routes of drug administration are used for effective delivery of drugs. Sublingual route is an important route for drug delivery since it offers many advantages for some drugs. The dosage form is placed beneath the tongue which releases the drug quickly for rapid absorption of drug. High blood flow, very thin mucous, greater permeability, continuous saliva flow and importantly avoidance of first pass metabolism are favourable features of this route. In addition, ease of administration and patient compliance are also the advantages of this route of administration.The dosage forms generally used in sublingual routes are tablets, films, sprays and drops. Tablets and films are placed beneath the tongue by hand while sprays and drops are administered with suitable devices for administration correct dose. Tablets are again presented as fast disintegrating tablets and porous tablets prepared by free drying that dissolves in 10 seconds in saliva. Sprays and drops provide additional advantage of formulating in novel drug delivery forms such as liposomes, polymerosomes, nanoparticles etc.The drug in dosage forms is released quickly in available saliva and further release happens due to continuous secretion of saliva. The only barrier for drug transport is the keratinized layer that is more lipophilic in nature. The dissolved drug is absorbed mainly by passive diffusion through transcellular and intercellular pathways and enters into systemic circulation directly thus avoiding first pass metabolism in gut and liver. Therefore, a quick onset of action with increased bioavailability is achieved. These advantages enable use of drugs that need rapid onset such as nitroglycerin used in the treatment of angina pectoris and fentanyl for pain relief. Dose reduction could be achieved due to reduced first pass metabolism. Various marketed products in different dosage forms are available that utilizes the advantages of this route.

PHARMACEUTICAL CHEMISTRY

MCH 101

ORPHAN DRUG DEVELOPMENT

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The growth of pharma industries has slowed in recent years because of various reasons such as patent expiries, generic competition, drying pipelines, and increasingly stringent regulatory guidelines. Many blockbuster drugs will lose their exclusivity in next 5 years. Therefore, the current economic situation plus the huge generic competition shifted the focus of pharmaceutical companies from the essential medicines to the new business model niche busters, also called orphan drugs. Despite the inherently small market for orphan drugs, orphan drug development has recently undergone significant growth, with global sales of nearly $85 billion. The new business model of orphan drugs could offer an integrated healthcare solution that enables pharma companies to develop newer areas of therapeutics, diagnosis, treatment, monitoring, and patient support. Incentives for drug development provided by governments, as well as support from the FDA and EU Commission in special protocols are a further boost for the companies developing orphan drugs. However, there are also significant challenges in the orphan drug space, including obstacles to study execution, regulatory hurdles, and a changing reimbursement environment. Here, we have compared the policies and orphan drug incentives worldwide along with the challenges faced by the pharmaceutical companies. Recent developments are seen in orphan drug approval, the various drugs in orphan drug pipeline, the challenges and the future prospective for development of orphan drugs and diseases.

BCH 101

CHALCONES

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Chalcones are precursors of flavanoids in plant biosynthesis. Chalcones became an object of continued interest in both academia and industry. Nowadays several Chalcones are used as food additives, cosmetic formulation ingredients and possess a broad spectrum of biological activities. Changes in their structure have offered a high degree of diversity that has proven useful for the development of new medicinal agents having improved potency and lesser toxicity and good pharmacological actions. The structure of the compounds is confirmed by infrared spectroscopy and nuclear magnetic resonance. However much of the pharmacological potential of Chalcones is still not utilized.

BCH 102

SUPRAMOLECULAR CHEMISTRY

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Supramolecular chemistry has developed over the last forty years as chemistry beyond the molecule. Starting with the investigation of basis molecular recognition, it has explored the implementation of molecular information in the programming of chemical systems towards self organization processes that may occurs either on basis of design or with selection of components. Supramolecular entities are by nature constitutionally dynamic by virtue of the liability of non covalent interactions. Importing such features into molecular chemistry, through the introduction of reversible bonds into molecules, leads to the emergence of a constitutional dynamic chemistry, covering both the molecular and supermolecular levels. It considers chemical objects and systems capable of responding to external solicitations by modification of their constitution through component exchange or reorganization. It aims at constructing highly complex, functional chemical systems from components held together by intermolecular forces. It thus opens way towards an adaptive and evaluative chemistry, a further step towards the chemistry of complex matter. A most basic and far reaching contribution of Supramolecular chemistry to chemical sciences has been implementation of concept of the molecular information and its corollaries, instructions and programmed chemical systems, with the aim of gaining progressive control over the organization of matter, over its structural and dynamic features.

BCH 103

STRUCTURE-BASED DRUG DESIGN OF HIV PROTEASE INHIBIOTORS

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Retroviral protease (PR) from the human immunodeficiency virus type 1 (HIV-1) was identified over a decade ago as a potential target for structure-based drug design. This effort was very successful. Four drugs are already approved, and others are undergoing clinical trials. The techniques utilized in this remarkable example of structure-assisted drug design included crystallography, NMR, computational studies, and advanced chemical synthesis. Other approaches to designing HIV-1 PR inhibitors, based on the concepts of symmetry and on the replacement of a water molecule that had been found tetrahedrally coordinated between the enzyme and the inhibitor. The emergence of drug-induced mutations of HIV-1 PR leads to rapid loss of potency of the existing drugs and to the need to continue the development process. Few drugs are developed to combat the drug resistance due to mutations examples include Tipranvir, Darunavir, and Foseamprenavir.

PHARMACOLOGY

MCL 101

PATHOLOGY, PHYSIOLOGY AND MEDICATION FOR AORTIC DISSECTION

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Aortic dissection occurs when a tear in the inner wall of the aorta causes blood to flow between the layers of the wall of the aorta, forcing the layers apart as a result of decreased blood supply to other organs, cardiac failure, and sometimes rupture of the aorta. The initiating event in an aortic dissection is a tear in the intimal lining of the aorta. Due to the high pressures in the aorta, blood enters the media at the point of the tear. The force of the blood entering the media causes the tear to extend. It may extend proximally (closer to the heart) or distally (away from the heart) or both. The blood will travel through the media, creating a *false lumen* (the *true lumen* is the normal conduit of blood in the aorta). Separating the false lumen from the true lumen is a layer of intimal tissue. This tissue is known as the intimal flap. Aortic dissection can lead to pericardial effusion, myocardial infarction, neurological symptoms, kidney failure, GIT bleeding. The diagnosis is made with medical imaging computed tomography, magnetic associated with severe characteristic chest or abdominal pain described as "tearing" in character, and often with other symptoms that result from decreased blood supply to other organs. Treatment of aortic dissection depends on the part of the aorta involved**.**

MCL 102

LEAKY GUT SYNDROME: CURRENT SCENARIO OF ITS CLINICAL DIAGNOSIS, TREATMENT AND PREVENTION

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Proponents of 'leaky gut syndrome claim that many symptoms and diseases are caused by the immune system reacting to germs, toxins or other large molecules that have been absorbed into the bloodstream via a porous ('leaky') bowel. While it is true that certain factors can make the bowel more permeable, this probably does not lead to anything more than temporary mild inflammation of an area of the bowel. Exponents of 'leaky gut syndrome' largely nutritionists and practitioners of complementary and alternative medicine believe the bowel lining can become irritated and 'leaky' as the result of a much wider range of factors, including an overgrowth of yeast or bacteria in the bowel, a poor diet and the overuse of antibiotics. This syndrome if neglected, leads to other complications affecting the whole body directly or indirectly. The treatment involves pharmacologically along with Non Pharmacological i.e. Diet to prevent worsening of the syndrome.

MCL 103

ALZHEIMER'S DISEASE: CURRENT SCENARIO OF ITS CLINICAL DIAGNOSIS, TREATMENT AND PREVENTION

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Dementia is a significant loss of cognitive functions such as memory, judgment, attention, and abstract thinking. Alzheimer's, the most common form of dementia, is a progressive brain disease. It affects 5 million Americans, and millions more worldwide**.** Clinical criteria for the diagnosis of Alzheimer's disease include insidious onset and progressive impairment of memory and other cognitive functions. There are no motor, sensory, or coordination deficits early in the disease. The diagnosis cannot be determined by laboratory tests. The diagnostic tests like medical history, brain imaging, neurological tests, and physical exam are important primarily in identifying other possible causes of dementia. Neuropsychological tests provide confirmatory evidence of the diagnosis of dementia and help to assess the course and response to therapy. Treatment involves cholinergic, antiglutamatergic therapies and also the use of anti-inflammatory agents and dietary supplements to prevent worsening of the disease.

MCL 104

OBSTRUCTIVE SLEEP APNEA: BAD NIGHT BAD DAY

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Obstructive sleep apnea (**OSA**) or obstructive sleep apnea syndrome is the most common type of sleep apnea and is caused by obstruction of the upper airway. It is characterized by repetitive pauses in breathing during sleep, despite the effort to breathe, and is usually associated with a reduction in blood oxygen saturation. These pauses in breathing called "apneas" (literally, "without breath"), typically last 20 to 40 seconds. The individual with OSA is rarely aware of having difficulty breathing, even upon awakening. It is recognized as a problem by others witnessing the individual during episodes or is suspected because of its effects on the body (*sequelae*). OSA is commonly accompanied with snoring. Obstructive sleep apnea is a common disorder whose prevalence is linked to an epidemic of obesity in Western society. Sleep apnea is due to recurrent episodes of upper airway obstruction during sleep that is caused by elevations in upper airway collapsibility during sleep. Although weight loss reduces upper airway collapsibility during sleep, it is not known whether its effects are mediated primarily by improvement in upper airway mechanical properties or neuromuscular control. A variety of behavioral, pharmacologic, and surgical approaches to weight loss may be of benefit to patients with sleep apnea. If untreated OSA may lead to Depression, Heart disease, Diabetics Mellitus and even fatal car accidents.

MCL 105

EXPERIMENTAL IMMUNOTHERAPY- A NEW WAY TO TREAT CANCER

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A way of fighting cancer that turns the body's immune cells into targeted tumor killers was named the breakthrough of the year. Immunotherapy has only worked for a small number of patients, and only in certain cancers, including melanoma and leukemia, but experts believe its promise is huge. Research began in the late 1980s when French scientists discovered a receptor on T-cells, called CTLA-4, a molecule that turned out to play an important role in regulating the immune system. A decade later, a Texas researcher showed that blocking CTLA-4 in mice "could unleash T-cells against tumor cells in the animals, shrinking them dramatically."As many as five big pharmaceutical companies are now on board with immunotherapy. A new drug made by Bristol Myers-Squibb was approved in 2011 Called ipilimumab. Research in 2012 on a group of 300 people showed the drug shrunk tumors by half or more in 31 percent of patients with melanoma, 29 percent with kidney cancer and 17 percent with lung cancer. Research out this year on 1,800 people with melanoma who received ipilimumab, 22 percent was alive three years later. A related treatment called chimeric antigen receptor therapy, which involves modifying a patient's own T-cells to make them attack tumors, has succeeded in putting 45 of 75 people with leukemia in total remission.

MCL 106

CURRENT ADVANCES IN THE TREATMENT OF ALZEIMERS DISEASE TARGETTING PROTEINS

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With the development of new therapeutic strategies, and the concept of mild cognitive impairement as an early stage of alzeimers disease, there ia an increasing need for an early and accurate diagnosis of alzeimers. Therefore, biological markers allows a positive diagnosis early in the course of disease. Alzeimers disease is characterized by neurofibrillary tangles composedof the abnormally hyperphosphorylated microtubules. The main proteinaceous components of neurofibrillary tangles Aβ, tau,neuronal thread proteins.The pathological accumulation of Aβ in the brain leadsto oxidative stress and neuronal destruction. Tau is a microtubule-associated protein normally present in neurons. In alzeimers, hyperphosphorylated tau forms the paird helical filaments. Neuronal thread protein is a novel protein that may be involved in neuritic sprouting. This is specifically expressed in the brains of alzeimers patients.

MCL 107

EVALUATION OF ANXIOLYTIC ACTIVITY OF ETHANOLIC EXTRACT OF FOENICULUM VULGARE IN MICE

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The present study was designed to investigate the anxiolytic activity of ethanolic extracts of Foeniculum vulgare fruit. The anxiolytic activity was evaluated by elevated plus maze, rota rod, open field test, light and dark hole board models. The efficacy of extract (100-200mg/kg) was compared with standard anxiolytic drugs diazepam (1mg/kg). Extract injected animals showed exploratory behavior with all tests similar to diazepam. The results showed that the extract significantly increased the number of entries and time spent in the open arm in the elevated plus maze apparatus. In light and dark test the extract produced significant increase in the time spent, number of crossing and decrease in duration of immobility in light box. In open field test, the extract showed significant increase in number of rearing, assisted rearing and number of square crossed. Furthermore the extract produced skeletal muscle relaxant affect assessed by rota rod. Altogether these results suggest that the ethanolic extract of Foeniculum vulgare may possess anxiolytic activity and provide a scientific evidence for its traditional claim.

MCL 108

CNS EFFECTS OF POLYHERBAL EXTRACTS ON RODENTS

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CNS effects like locomotor, hypnotic, anticonvulsant and myorelaxant action of polyherbal extracts containing *Leptadenia reticulata* (roots), *Mimusops elengi* (bark) and *Evolvulus alsinoides* (whole plant) acetone and ethanolic extract were studied in preclinical animal models. The dose of the both the extracts were 200mg/kg was assessed based upon the toxicity study done as per the OECD guidelines. Results suggested that locomotor performance of the animals were reduced than the normal after the treatment with the extracts in photoactometer. The extracts prolonged the sleeping time in mice when given along with Phenobarbital (50mg/kg, *i.p*). Moderate anticonvulsant action was noticed in MES induced convulsions and significant myorelaxant activity in rotarod model studied. Diazepam (2mg/kg, p.o) was used as the standard drug for locomotor & myorelaxant effect. Phenytoin (25mg/kg, *p.o*) was used as the standard for anticonvulsant action. The extracts possess potent depression action in all the animal models studied. The extract might potentially act by GABAnergic activation in brain which again suggested the depression action of the polyherbal extracts.

BCL 101

GLIPTINS: BETTER APPROACH FOR TYPE 2 DIABETES

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Diabetes Mellitus is a metabolic disorder which results from defects in insulin secretion, insulin action, or both, further characterized by hyperglycemia, and causes long term damage and failure of various organs. It is estimated that 366 million people had Diabetes Mellitus in 2011; by 2030 this would have risen to 552 million. Many oral hypoglycemic agents are marketed nowadays. DPP-IV Inhibitors or Gliptin, a new oral hypoglycemic class, they work by promoting insulin secretion by stimulating Incretins; GLP-1 (Glucagon like Peptide-1) and GIP (Glucose -dependent insulin tropic peptide) and inhibiting DPP-IV enzyme which deactivates Incretins. DPP-IV Inhibitors produce no weight gain and may have long term beneficial effects on beta-cell function and mass and so far they have fewer gastrointestinal effects. Now this drug class is available, we will discuss the disease pathology and mechanism of action of DPP-IV inhibitors, efficacy of this new class of oral hypoglycemic agents

BCL 102

GENE THERAPY IN DIABETES TYPE -1

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It is the use of DNA as a pharmaceutical agent to treat disease. The most common form of gene therapy involves using DNA that encodes a functional, therapeutic gene to replace a mutated gene. Types of gene therapy- Somatic gene therapy, Germ line gene therapy. Type 1 diabetes (T1D) is a chronic autoimmune disease, whereby auto-reactive cytotoxic T cells target and destroy insulin-secreting β-cells in pancreatic islets leading to insulin deficiency and subsequent hyperglycemia. These individuals require multiple daily insulin injections every day of their life without which they will develop life-threatening diabetic ketoacidosis (DKA) and die. Gene therapy by viral vector and non-viral transduction may be useful techniques to treat T1D as it can be applied from many different angles; such as the suppression of auto reactive T cells to prevent islet destruction (prophylactic) or the replacement of the insulin gene (post-disease). The need for a better method for providing euglycemia arose from insufficient numbers of cadaver islets for transplantation and the immunosuppression required post-transplant. Ectopic expression of insulin or islet modification have been examined, but not perfected. This review examines the various gene transfer methods, gene therapy techniques used to date and promising novel techniques for the maintenance of euglycemia in the treatment of T1D.

BCL 103

NEUROFIBROMATOSIS

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Neurofibromatosis is genetic disease characterized by lesions mainly in brain region with a broad array of complications associated with it. It is an autosomal dominant genetic disease in which prepondence of lesion formation is primarily in brain, soft tissues or bone. The term 'neurofibroma' was coined by Von Recklinghausen in 1881 for tumour of peripheral nerve sheath. The involvement of tumors may lead to fatal damage as nerves will be compressed. The cells affected by this disease include Schwann cells, melanocytes and endometrial fibroblasts .The prime role of treatment is to obtain a relief from the symptoms associated this disease. The hallmark feature of this disorder is manifestation of chronic pain in peripheral nerves which are mainly affected. Complications include gastrointestinal problems including pain, dyspepsia, constipation.

BCL 104

ADHD: ATTENTION-DEFICIT HYPERACTIVITY DISORDER

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Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood disorders and can continue through adolescence and adulthood. Symptoms include difficulty staying focused and paying attention, difficulty controlling behavior, and hyperactivity (over activity). The disorder is commonly occurred in 3 to 7 out of every 100 school-aged children. ADHD is commonly perceived as a childhood disorder, but it persists into adulthood in 35% to 70% of affected people. Symptoms occur at an early age, occur in most areas of a child's life, and persist over time, frequently into adulthood the precise constellation of symptoms changes as children grow and develop. With proper medication and handling the child can grow up to be a vibrant, active and successful adult. Not all children and youth have the same type of ADHD. Some may be hyperactive. Others may be under-active. Some may have great problems with attention. Others may be mildly inattentive but overly impulsive.

BCL 105

AUTISM- SYSTEMATIC STUDY AND ITS MANGEMENT

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Autism is a disorder of neural development characterized by impaired social interaction and verbal and non-verbal communication, and by restricted, repetitive or stereotyped behavior. It affects information processing in the brain by altering how nerve cells and their synapses connect and organize. Autism has a strong genetic basis, although the genetics of autism are complex. It first appears during infancy or childhood, and generally follows a steady course without remission. People with autism have social impairments and often lack the intuition about others that many people take for granted. Children with high-functioning autism suffer from more intense and frequent loneliness. Making and maintaining friendships often proves to be difficult for those with autism. About a third to a half of individuals with autism, do not develop enough natural speech to meet their daily communication needs. Other characteristics include stereotypy, restricted, compulsive behavior, self injury, etc. Diagnosis is based on behavior, not cause or mechanism. There is no known cure for autism. No single treatment is best and treatment is typically tailored to the child's needs. The main goals when treating children with autism are to lessen associated deficits and family distress, and to increase quality of life and functional independence.

BCL 106

DYSLEXIA: DEVELOPMENTAL READING DISORDER

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Dyslexia is a neurological condition manifesting in children, who typically are average in intelligence, struggling academically. It is characterized by difficulty with learning to read fluently and with accurate comprehension despite normal intelligence. It is the most common learning disability. Children with dyslexia have problems processing the information they see when looking at a word. It occurs when there is a problem in areas of the brain that help interpret language. Unfortunately, sometimes children suffering are labeled as "lazy" when, in fact, they tend to be working more diligently than other children to "keep up." This includes difficulty with phonological awareness, phonological decoding, processing speed, orthographic coding, auditory short-term memory, language skills/verbal comprehension, and/or rapid naming. It is characterized by dysgraphia, attention deficit disorder, auditory processing disorder , Developmental coordination disorder. Dyslexia is a gift in its own way as people suffering are highly creative, intuitive and excel at three dimensional problem solving and hands on learning

BCL 107

NANO MEDICINE AND NANOTOXICOLOGY

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Nanotechnology is considered as one of the key technologies of the 21st century and promises revolution in our world. Nano sized materials have been investigated as potential medicines for several decades. Current Nano material research is focused on the medical applications of Nanotechnology, whereas side effects associated with nanotechnology use, especially the environmental impacts, are not taken into consideration during the engineering process. Nano sized materials do behave differently to low-molecular-weight drugs, the biological properties of nonmaterial's being mainly dependent on relevant physiology and anatomy. Bio distribution, movement of materials through tissues, phagocytosis, opsonization and endocytosis of Nano sized materials are all likely to have an impact on potential toxicity. In turn these processes are most likely to depend on the nanoparticles surface. Successful development of future Nano medical devices and pharmaceuticals thus requires a consolidated information base to select the optimal Nano material in a given situation, understanding the toxicology and potential side effects associated with candidate materials for medical applications, understanding product life cycle, and communicating effectively with personnel, stakeholders, and regulators. This can be achieved through an innovative combination of toxicology, risk assessment modeling, and tools developed in the field of multi criteria decision analysis (MCDA).

BCL 108

DRUGS FOR THE TREATMENT OF ALZHEIMER'S DISEASE

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Alzheimer's disease is the common form of dementia. It is a progressive neuron degenerative disease which occurs due to degeneration, loss of function and death of neurons in many parts of brain. This disease is associated with accumulation of brain beta amyloid peptides, vascular disorders also contribute to progression of Alzheimer's include memory impairment deterioration of language, even cause death. The FDA has launched two medicines cholinesterase inhibitors and memantine they help to stabilize symptoms. For a limited time by affecting certain chemicals involved in carrying messages amongst the brain cells. so, different drugs are used in the treatment of Alzheimer's disease

BCL 109

PROGERIA

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Progeria (Hutchinson-Gilford Progeria syndrome) is a rare genetic disorder that offers considerable insight into the biology of premature aging. This review summarizes the clinical characteristics of this disease and the underlying mutation in the lamin A (*LMNA*) gene that results in this phenotype. Modifications in the processing of prelamin - A through alterations in farnesylation are detailed, because this pathway offers a possible drug target. Finally, discussion of an ongoing clinical trial for these children, including possible parameters for evaluation, is discussed. In the span of less than a decade, this disease has progressed from an interesting phenotype to one in which the gene defect has been identified, animal models have been created and tested with drugs that target the primary disease pathway, and significant clinical baseline data for the support of a clinical trial have been obtained.

BCL 110

5-HT RECEPTORS AS TARGETS FOR DRUG ACTION

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5-hydroxytryptamine (5-HT) has become one of the most investigated and complex biogenic amines. The main receptors and their subtypes, e.g., 5-HT_I (5-HT_{1A}, 5-HT_{1B}, 5-HT_{ID}, 5-HT_{IE} and 5-HT_{1F}), 5-HT_2 (5-HT_{2A}, 5-HT_{2B} and 5-HT_{2C}), 5-HT_3, 5-HT_4, 5-HT_5 (5-HT_{5A}, 5-HT_{5B}), 5-HT_6 and 5-HT_7 have been identified. Specific drugs which are capable of either selectively stimulating or inhibiting these receptor subtypes are being designed. This has generated therapeutic potentials of 5-HT receptor modulators in a variety of disease conditions. Conditions where 5-HT receptor modulators have established their use with distinct efficacy and advantages include migraine, anxiety, psychosis, obesity and cancer therapy-induced vomiting by cytotoxic drugs and radiation. Discovery of 5-HT, its biosynthesis, metabolism, physiological role and the potential of 5-HT receptor modulators in various nervous, cardiovascular and gastrointestinal tract disorders, bone growth and micturition have been discussed in this article.

BCL 111

AUTISM

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Autism is a lifelong developmental disability that affects how a person communicates with, and relates to, other people. It also affects how they make sense of the world around them. It is part of the autism spectrum and is sometimes referred to as autism spectrum disorder or an ASD. It is a spectrum condition, which means that, while all people with autism share certain difficulties, their condition will affect them in different ways. Some people with autism are able to live relatively independent lives but others may have accompanying learning disabilities and need a lifetime of specialist support. People with autism may also experience over or under sensitivity to sounds, touch, tastes, smells, light or colors. Asperger syndrome is a form of autism. People with Asperger syndrome are often of average or above average intelligence. They have fewer problems with speech but may still have difficulties with understanding and processing language. People with autism have said that the world, to them, is a mass of people, places and events which they struggle to make sense of, and which can cause them considerable anxiety. In particular, understanding and relating to other people, and taking part in everyday family and social life may be harder for them. Other people appear to know, intuitively, how to communicate and interact with each other, and some people with autism may wonder why they are 'different'. Autism treatment strategies are tailored depending upon individual needs and available family resources. But in general, children with autism respond best to highly structured and specialized treatment.

BCL 112

THE EVALUATION OF DISCOMFORT AND ANXIETY IN THE PATIENT UNDERGOING CORONARY ANGIOPLASTY

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Coronary heart disease is now the leading cause of death in the world and in Poland. Every year, the acute coronary syndromes (ACS) falls over a hundred thousand people, of whom the vast majority are treated invasively. Percutaneous coronary intervention (PCI) carries a possible complication. The possibility of their occurrence is one of the reasons to feel fear and discomfort prior to the study. The study included 100 consecutive patients undergoing percutaneous coronary intervention for ACS or stable angina. The research method used in the survey was a questionnaire form, includes a total of 23 questions. The survey was carried out 24 hours after the execution diagnostic procedure or therapy. PCI was performed significantly more often with radial access--65%, than femoral--35%. People undergo PCI in 77% had knowledge of it. The main source of information was the hospital staff (48%), GPs (20%) and to a lesser extent, the Internet (16%) and friends (12%). To assess the discomfort uses a linear scale of points. Depending on the vascular access was obtained an average of 5.7 points for radial access and 8.8 points for femoral access, corresponding to moderate and very large intensity of discomfort. The degree of discomfort was lower (42%) or compatible (27%) of the representations before the treatments. The intensity of the perceived fear determined the 53% of the very large, and 21% as large. On average, a 10-point scale, respondents have identified him at 7.9 points. Significantly negatively correlated on the level of education ($r = -0.421$, $P < 0.05$) and with the degree of knowledge of the declared procedure ($r = -0.519$, $P < 0.01$) and positively correlated with the intensity of reported discomfort ($r = 0.497$ $p < 0.05$).

BCL 113

INSULIN PILLS

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Diabetes mellitus is a syndrome of impaired carbohydrate, fat, and protein metabolism. It is the most common endocrine disorder. Hallmarks of diabetes mellitus are the three 'ploys' polyuria (excessive urine production due to an inability of the kidneys to reabsorb water), polydipsia (excessive thirst) and polyphagia (excessive eating or hunger). Insulin is a hormone secreted by beta cells of the pancreatic islet. It accelerates the facilitated diffusion of glucose into the body cells and accelerates glycogenesis, lipogenesis and slows down glycogenolysis and gluconeogenesis. For years, it had been a challenge for researchers to transform delivery of insulin therapy from a shot to a pill as the body's digestive enzymes also break down insulin before it can get to work. Now the scientists have found ways to shield insulin from the digestive enzymes and get it into the blood stream. The team of researchers packaged insulin in tiny sacs made of lipids or fats called liposomes which were wrapped in layers of protective molecules called polyelectrolytes. In order to get these "layersomes" absorbed into the bloodstream, the scientists attached folic acid , a kind of vitamin B that has been shown to help transport liposomes across the intestinal wall into the blood . In rats, the delivery system lowered blood glucose levels almost as much as injected insulin, and more importantly the effects of the "layersomes" lasted longer than of injected insulin. Oral insulin could make a bid difference to the lives of people with diabetes. Children, elderly people and those with a phobia of needles would benefit particularly if and when insulin capsules become a safe and effective treatment for the condition.

BCL 114

REITERS SYNDROME- A FORM OF REACTIVE ARTHRITIS

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Reactive arthritis, formerly referred to as Reiter's syndrome, is a form of arthritis that affects the joints, eyes, urethra and skin. The disease is recognized by various symptoms in different organs of the body that may or may not appear at the same time. Also one form of reactive arthritis is characterized by a triad of arthritis, nongonococcal urethritis, and conjunctivitis, and by lesions of the skin and mucosal surfaces.

BCL 115

IS IODIZED SALT NECESSARY IN OUR DAILY LIFE ?

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Iodine is an essential micronutrient. Its daily requirement for adults is placed at 150 µg/day. This amount is normally supplied by well-balanced diets and drinking water, except in areas where food and water are deficient in iodine. Inadvertent use of iodized salt can lead to hypothyroidism. The salt iodization programme dates back to 1950's in Kangra district, Himachal Pradesh. The classic study of Professor Ramalinga Swamy revealed the iodine as a causative factor for endemic goiter and consuming salt iodized with potassium iodide. Encouraged with these results government of India launched "National Goiter control programme " in 1962.Govt of India with the help of WHO and UNICEF set up iodization plants with total annual capacity of 3.85 lakh tones. Recent retrospective study has shown that excess usage of iodized salt can lead to hypothyroidism and associated complications like diabetes and hypertension. There was statistically significant association of hypothyroidism with excess usage of iodized salt, with hypertension and diabetes the two most important diseases commonly encountered in the community. Other effects include free oxygen radical generation and immune stimulation of iodine in thyroid cells. So, iodine supplementation should be restricted to pockets of iodine deficiency only. Awareness must be created among the public regarding the harmful effects of excess iodine and facility for urinary iodine estimation must be made available in all district headquarters hospitals and for all individuals at request. There is no much research on this aspect but Preventing high iodine induced hypothyroidism is as important as preventing iodine deficiency induced hypothyroidism.

PHARMACOGNOSY

MCG 101

COMPARATIVE STUDY OF IN VITRO ANTIOXIDANT ACTIVITY OF AQUEOUS EXTRACTS OF *Spinacia oleracea, Capsicum annuum, Benincasa cerifera, Prunus amygdalus* AND *Ficus carica*

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Antioxidants are vital substances which possess the ability to protect the body from damage caused by free radical induced oxidative stress. Epidemiological studies specify that intake of fruits and vegetables have the ability to inhibit the damaging behavior of free radicals in the human body. In this study, we assessed antioxidative activity of aqueous extracts of *Spinacia oleracea, Capsicum annuum*, *Benincasa cerifera, Prunus amygdalus* and *Ficus carica*. The extracts were studied for antioxidant activity by Hydroxyl radical scavenging method (Deoxyribose method) and were compared to standard antioxidant Ascorbic acid (AA). The concentration required for 50% inhibition (IC_{50}- Inhibitory Concentration) was calculated. All the extracts showed effective free radical scavenging activity which increased with increasing concentration. The analysis was made with the use of UV-VIS Spectrophotometer (Model Shimadzu UV-1800) at a wavelength of 532 nm. The present study revealed that *Benincasa cerifera* extract exhibited the highest Hydroxyl radical scavenging activity (IC_{50} value of 1200 µg/ml) followed by *Ficus carica* (IC_{50} value of 2060 µg/ml), *Capsicum annuum* (IC_{50} value of 2360 µg/ml), *Spinacia oleracea* (IC_{50} value of 2470 µg/ml) and *Prunus amygdalus* (IC_{50} value of 7270 µg/ml). Many flavonoids and related polyphenols contribute significantly to the total antioxidant activity as well as therapeutic uses of many fruits and vegetables. Natural dietary antioxidants with health benefits like Winter melon, Spinach, Capsicum, Almond and Fig are preferred because synthetic antioxidants are considered carcinogenic.

MCG 102

REVERSE PHARMACOGNOSY: NEW THOUGHT WITH INNOVATIVE APPROACH

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The development of a new drug is a long and costly process. Determination of in-vivo activity of a natural drug is also a challenging work. Reverse pharmacognosy aim toward finding of new biological targets for natural compounds by virtual or real screening and identifying natural sources that contain the active molecules. Reverse pharmacognosy utilizes techniques such as high-throughput screening (HTS), virtual screening. Moreover SELENERGY (a virtual screening tool) is central tool in reverse pharmacognosy to identify biologic property for natural molecules.

MCG 103

A REVIEW ARTICLE ON DIETARY FLAVONOID QUERCETIN

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Flavanoids are phenolic substances widely found in many edible parts of the plants. Numerous epidemiological and preclinical studies have revealed that a diet rich in plant-derived foods has a protective effect on human health. Identifying bioactive dietary constituents is an active area of scientific investigation that may lead to new drug discovery. Quercetin (2-(3, 4-dihydroxyphenyl)-3,5,7-trihydroxy-4*H*-chromen-4-one) is a flavonoid widely distributed in nature as a flavonol. It is found to be the most active of the flavonoids in preclinical and clinical studies and many medicinal plants owe much of their activity to the high quercetin content, such as rutin and quercitrin. Foods rich in quercitrin include capers, lovage, apples, tea, onions, red grapes, citrus fruits, broccoli and other leafy green vegetables, cherries, berries including raspberry, cranberry and the fruit of the prickly pear cactus and traditional medicinal plants (*Emblica officinalis*, *Melia azadirachta, Euphorbia hirta, Capparis spinosa etc.;).* In this article, the distribution of quercitrin in the edible plants and its pharmacological properties, pharmacokinetics and safety aspects are reviewed. Numerous preclinical studies have shown that quercetin and some glycosides of quercetin have a wide range of pharmacological activities, including antioxidant, anti-inflammatory, anticancer, cardioprotective, neuroprotective, antidepressant, antidiabetic, ulcerprotective, analgesic and antiallergic activities.

MCG 104

RECOMBINANT LEPTIN FOR WEIGHT LOSS IN OBESE AND LEAN ADULTS

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Leptin, a protein secreted from white adipocytes, has been used in the regulation of food intake, energy expenditure, and whole body energy balance in rodents and humans. Exogenous administration of leptin to ob/ob mice leads to a significant improvement in reducing food intake and weight loss. It acts by binding to specific receptors in the hypothalamus to alter the expression of several neuropeptides that regulate neuroendocrine function and energy intake and expenditure. Thus, leptin plays an important role in the pathogenesis of obesity and eating disorders.

MCG 105

PRENATAL DIAGNOSIS AND GENE THERAPY FOR THALASSAEMIA

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Thalassemia is an inherited blood disorder in which the body makes an abnormal form of hemoglobin, the protein responsible for oxygen transport resulting in excessive destruction of RBC leading to anemia. The intent of the current approach is to detect the thalassaemic suspect during pregnancy (13^{th} - 22^{nd} weeks) and terminate the risk of Thalassemia by the aid of gene therapy employing “lentivirus gene medicine”.

MCG 106

QUELLING THERAPY: A TECHNOLOGICAL BREAKTHROUGH

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Genomic technologies have created a massive increase in the number of uncharacterized gene target of which RNAi has become a major bottleneck in drug discovery and development process to address both target validation and inhibitor specificity challenges. RNAi has evolved as an approach for reducing expression of endogenously expressed proteins and harnessed to silence mRNAs encoding pathogenic proteins for therapy. Recently gene silencing demonstrated in humans has held a promising treatment for fatal diseases or providing as an alternative to traditional therapies

MCG 107

STEM CELL-A NEW HOPE FOR MEDICINE

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Stem cells have offered much hope by promising to greatly extend the numbers and range of patients who could benefit from transplants. Scientists all over the world are researching ways to use stem cells and use them to learn more about, to diagnose, and to treat various diseases and conditions. Stem cells are cells that can multiply without changing, that is, self-renew, or can differentiate to produce specialized cell types. Stem cells has constituted a revolution in regenerative medicine and cancer therapies by providing the possibility of generating multiple therapeutically useful cell types. These new cells could be used for treating numerous genetic and degenerative disorders.

BCG 101

ROLE OF NEEDLE FREE INJECTION

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Needle free injections are novel drug delivery systems to introduce various medicines without piercing the skin and are capable of injecting the medicines through sub-cutaneous, intra-muscular and intra-dermal routes, moreover this is bio-equivalent to syringe and needle, results in less pain and is strongly preferred by the patients. Not only it can benefit the pharmaceutical industry in increasing product sales, but also has added potential to increase the compliance with different dosage forms and improved outcomes. This developing technology promises to make the administration more efficient and less painful as there are patients who are suffering from chronic diseases and require injectible products 2-3 times a day example: Diabetic patients. This review focuses on the advancement of needle less drug delivery systems not only in Day to Day life but also in Research and Development.

BCG 102

A NEW PROMISE: NEURAL TISSUE ENGINEERING USING NANOTECHNOLOGY

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The interdisciplinary approach with nanotechnology and animal tissue culture technique is going to revolutionize biomedical science in the next fifty years. Nanotechnology along with regulated animal tissue culture, makes tissue engineering a realization based on the creation of new tissues in vitro followed by surgical placement in the body or the stimulation of normal repair in situ using bio-artificial constructs or implants of living cells introduced in or near the area of damage at nano level. It makes use of artificially stimulated cell proliferation by using suitable nano-material based scaffolds and growth factors. Nanotechnology can be successfully used to create a tissue or organ that can take the place of one that is terminally diseased, The key components include: cells, scaffolds, signals and bioreactors. Nano materials such as quantum dots, fluorescent carbon nano tubes and fluorescent magnetic nano particles, etc., are been used for imaging and tracing and for gene or drug delivery. Designed nanostructures have been used to regulate the proliferation and differentiation of stem cells, which will speed up the understanding and controlling the micro environmental signals, helping to solve the current bottleneck problems of tissue -based therapy. In the future, we could imagine a world where medical nano devices are routinely implanted or even injected into the bloodstream to monitor wellness and to automatically participate in the repair of systems that deviate from established norms.

BCG 103

MONOCLONAL ANTI BODIES FOR CANCER TREATMENT

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Cancer is one of most cogent culprit for causes of mortality in society. Chemotherapy, radiation therapy and surgery are the elements which are endorsed to combat it. Nowadays antibodies are also gaining much attention in cancer treatment. Antibodies are found to be important and most promising and target specific therapeutic agents for cancer due to their epitope specific interaction. Many clinically useful antibodies can manipulate tumour-related signaling. In addition, antibodies exhibit various immunomodulatory properties and, by directly activating or inhibiting molecules of the immune system, antibodies can promote the induction of antitumor immune responses. Antibody-drug conjugates prove to be more promising in the treatment.

BCG 104

STEM CELLS AND ITS APPILCATIONS IN PHARMACY

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Stem cells have an impressive self-renewal and differentiation potentials which holds great promise in cell and gene therapy applications in the treatment of many disorders. Translating the potentials of stem cells into clinical benefits encounters enormous challenges (engraftment of stem cells) maintaining genetic stability and preventing oncogenic potential. They are derived from the umbilical cord and are preserved in various preservation centers. They are of two types a)embryonic stem cells and b)adult stem cells. Stem cell therapy principally involves introducing new cells into the damaged or diseased tissue to replenish the organ or tissue. The major advantage of developing gradual differentiation method of embryonic stem cells is, they could represent precise target cell population, thus allowing us to develop specific drugs pertaining to the target cell excluding toxicities or promising maximum therapeutic benefits. The recent advancements have proved that stem cell therapy can cure chronic leukemia lymphoma, liver disease; skin problems etc and they have also been successful in 3d organ printing.

BCG 105

IRRATIONAL USE OF ANTI-BACTERIAL MAY REPEAT 'SUPERBUG' CONCEPT

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The control of infectious disease with anti-bacterial was considered as a potent therapeutic outcome of the last century. Today resistance to these magic bullets became 'SUPER BUGS'. The cause for eruption of resistance is again due to irrational, unnecessary use of anti-bacterial. In developing countries like ours not only there is a need of reputed monitoring of antibiotics use, but also interventions form public, pharmacist and physician is needed. The study is aimed to record on use of antibiotics and understand the causes for irrational use. Collection of information on use of anti-bacterial from retail pharmacy outlets and households. In addition we recorded the awareness on use of such drugs in a structured schedule. The data has been complied and analyzed. It is found that (30%) purchased antibiotics at the retail pharmacy outlet on self-request in spite they belong to scheduled category of drugs. The answer on such purchases was that his friend used (23%) the drugs and they relieved disease symptoms (40%). Many (60%) of them don't know on required duration of such medicaments and their effects if not used to full potential. The prescription profile suggests that the doctors preferred to have Pencillins (37%), Cephalosporin's (32%), quinolones (15%). On such prescriptions also inadequate purchase of antibiotics was around 36% due to various socio-economic reasons and lack of awareness. The irrational use of anti-bacterial is a matter of serious concern. The data and reports suggest that interventions in awareness among public, strengthening role of pharmacist in restricting the sale of schedule category drugs and physician in prescribing them when need is appropriate and is the need of the hour.

BCG 106

REVIEW ARTICLE ON GINSENG

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The root of Panax ginseng C.A. Meyer has been shown to induce nitric oxide (NO) release resulting in a hypotensive effect. However, the main active component contributing to vascular endothelium relaxation remains uncertain. In this study, we hypothesized that multiple components of ginseng extract might have combinatory effects providing greater health benefits than a single ginsenosides. To test this hypothesis, we compared the NO-releasing and endothelial NO synthase (eNOS) activating potency of wide range of ginseng extracts (crude extract, CE; protopanaxatriol-enriched extract, TE; protopanaxatriol-enriched extract, DE) and individual ginsenosides (Rg1, Re and Rb1) in human umbilical vein endothelial cells. We found that TE had the highest potency in NO production, followed by CE, DE, and Rg1. We also observed that TE-treatment resulted in rapid activation of intracellular signaling pathways, immediate linear rise of NO, and increased eNOS activation. TE-induced activation of eNOS was abolished by pretreatment with wortmannin (inhibitor for PI3K-Akt), compound C (inhibitor for AMP activated protein kinase, AMPK) or L-NAME (inhibitor for NOS), whereas Rg1-induced eNOS phosphorylation was only partially attenuated. Further analysis revealed that TE, but not Rg1, results in AMPK phosphorylation at Thr172. These novel finding add evidence that the multiple components of Panax ginseng extract rich in protopanaxatriol offers combinatorial effects in NO production and vascular endothelium relaxation via multiple signaling pathways.

BCG 107

CLINICAL SPECTRUM OF CITRULLINE-A NON ESSENTIAL AMINO ACID PRESENT IN WATERMELON

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Citrulline is a non-essential amino acid, meaning that the body can manufacture it from other nutrients. Within the body, Citrulline is converted to the amino acid L-arginine. These Citrulline residues are generated by a family of enzymes called peptidylarginine deiminases (PADs), which convert arginine into Citrulline in a process called citrullination or deimination. In recent studies, Citrulline has been found to relax blood vessels. Circulating Citrulline concentration is, in humans, a biomarker of intestinal functionality. L-Citrulline is a naturally occurring amino acid. It is found in some foods like watermelons and is also produced naturally by the body used for Alzheimer's disease, dementia, fatigue, muscle weakness, sickle disease, erectile dysfunction, high blood pressure, and diabetes. It is used for heart disease, body building, increasing energy, and for improving athletic performance. L-Citrulline might help increase the supply of ingredients the body needs to making certain proteins. It might also help open up veins and arteries to improve blood flow and reduce blood pressure. The aim of present article is to provide in depth knowledge about clinical uses, functions, and health benefits of Citrulline. An attempt is also made to focus on biosynthesis, sources as well as side effects of Citrulline.

BCG 108

FRUIT FLY AS A MODEL ORGANISM

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The fruit fly Drosophila melanogaster is a versatile model organism that has been used in biomedical research for over a century to study a broad range of phenomena. There are many technical advantages of using Drosophila over vertebrate models; they are easy and inexpensive to culture in laboratory conditions, have a much shorter life cycle, they produce large numbers of externally laid embryos and they can be genetically modified in numerous ways. Research using Drosophila has made key advances in our understanding of regenerative biology and will no doubt contribute to the future of regenerative medicine in many different ways. Reply Forward

BCG 109

BONE TISSUE ENGINEERING

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Bone tissue engineering is still in its infancy. Most research efforts are focused on the creation of bulk bone tissue and not on the organization of bone matrix, which is characteristic for bone tissue to carry out the weight bearing function. In long bones for instance trabecular structures are aligned along the principle stress lines. The application of MAPCs in bone regeneration is currently under investigation. The most successful materials for bone engineering are bone mimicking materials, such as demineralized bone matrix (DBM) and hydroxyapatite/tricalcium phosphate/collagen type I ceramics. To increase the osteo induction properties of a tissue engineered construct, growth factors are incorporated into ceramics or polymer scaffolds. BMPs are the most extensively used growth factors in bioactive scaffolds, because they were discovered by their ectopic bone induction capacity. Bioreactors provide a culture environment to grow a cell-material-growth factor construct. They are designed to seed the cells homogenously in the scaffold, to control the culture medium (temperature, osmolality, levels of oxygen, nutrients, metabolites, regulatory molecules), facilitate mass transfer between the cells and the culture environment, and provide physiologically relevant physical signals(fluid flow, shear, pressure, compression/stretch, torsion). In vivo, animal models are not only used to test a bone engineering construct, but also to culture a TE-construct. Therefore, animal models can be considered as in vivo bioreactors. Interestingly, plastic surgeons have applied this principle.

BCG 110

EPIGENETIC BIOMARKERS

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In the recent years, knowledge about cancer biomarkers has increased tremendously providing great opportunities for improving the management of cancer patients by enhancing the efficiency of detection and efficacy of treatment. Recent technological advancement has enabled the examination of many potential biomarkers and renewed interest in developing new biomarkers. Biomarkers of cancer could include a broad range of biochemical entities, such as nucleic acids, proteins, sugars, lipids, and small metabolites, cytogenetic and cytokinetic parameters, epigenetic factors as well as whole tumour cells found in the body fluid.In the diagnosis of cancer, epigenetic biomarkers offer advantages over other types of biomarkers because they are expressed against a person's genetic background and environmental exposure, and because epigenetic events occur early in cancer development. The goal of epigenetic biomarker development is to design experimental assays that produce relevant information for diagnosis, prognosis and therapy optimization in routine clinical treatment and drug discovery.

PHARMACEUTICAL ANALYSIS & QUALITY ASSUARANCE

MQA 101

DEVELOPMENT AND VALIDATION OF HEAD SPACE GAS CHROMATOGRAPHY METHOD FOR THE ESTIMATION OF RESIDUAL SOLVENTS IN CAPECITABINE

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Capecitabine is an oral systemic prodrug that is enzymatically converted to 5-fluorouracil (5-FU). 5-FU is an oral tumor selective fluoropyrimidine carbamate used in the treatment of metastatic colon or rectal cancer, metastatic breast cancer and in gastric cancer. Head space Gas chromatographic method was developed and validated for the determination of residual solvents in Capecitabine using nitrogen as carrier gas with ZB-624, bonded phase, 30m x 0.53 mm, 3µ column and flame ionization detector. The developed method was validated and the parameters were found to be within the limits of ICH guidelines. The retention time for residual solvents individually and in spiked standard solution was determined. The %RSD for method precision was found to be within the limits. The percentage recovery ranges from 90-110% and correlation coefficient $R^2 \geq 0.999$. The limit of detection and limit of quantitation were also found to be within limits. Head space GC analysis of Capecitabine tablet was carried out for determination of content of the residual solvents acetone, MDC, ethyl acetate and toluene. The developed method was found to be precise, sensitive, accurate, robust and efficient. As the results obtained were within the specified limits as per ICH guidelines, the method can be used for routine analysis of Capecitabine in analytical laboratories.

MQA 102

RP-HPLC METHOD DEVELOPMENT AND VALIDATION FOR THE SIMULTANEOUS QUANTITATIVE ESTIMATION OF EFAVIRENZ, LAMIVUDINE AND ZIDOVUDINE IN TABLETS

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A reverse Phase High Performance Liquid Chromatographic (RP-HPLC) method has been developed and validated for the simultaneous quantitative estimation of Efavirenz 600 mg, Lamivudine 150mg and Zidovudine 300 mg in tablets as per ICH guidelines. The optimized method uses a reverse phase C18 column, Enable C18G (250 X 4.6 mm;5µ), a mobile phase consisting of acetonitrile:0.02M potassium dihydrogen orthophosphate buffer adjusted to pH 3.2 in the proportion of 30:70v/v, flow rate of 1.0 ml/min and a detection wavelength of 275nm using a UV detector. The developed method resulted in Efavirenz eluting at 2.01 min, Lamivudine at 2.90 min and Zidovudine at 7.52 min. The linearity of the method was over the range of 75-450µg/ml for Efavirenz, 18.75-112.5µg/ml for Lamivudine and 37.5-225µg/ml for Zidovudine. The method precision was exemplified by relative standard deviations of 0.15 % for Efavirenz, 0.24% for Lamivudine and 0.37% for Zidovudine. Percentage Mean recoveries obtained during accuracy were in the range of 98-102. The limit of detection (LOD) was obtained as 20ng/ml for Efavirenz, 1ng/ml for Lamivudine and 2ng/ml for Zidovudine.. The limit of quantitation (LOQ) was obtained as 50 ng/ml for Efavirenz, 2.5ng/ml for Lamivudine and 5ng/ml for Zidovudine. Accordingly the developed reverse phase HPLC isocratic method is accurate, precise and linear and therefore the method can be used for the routine analysis of Efavirenz, Lamivudine and Zidovudine in tablets in various pharmaceutical industries.

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MQA 103

NATURAL EXCIPIENTS

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Pharmaceutical formulation development involves various components in addition to the active pharmaceutical ingredients. The concept of use of excipients has undergone evolution from their use as inert substances in pharmaceutical formulations to essential constituents of formulation. Due to various limitations for the use of synthetic excipients like high cost, toxicity, environmental pollution, poor patient compliance and non-renewable use of natural excipients has undergone tremendous increase nowadays because these overcome the limitations posed by synthetic ones as these are non-toxic, easily available, inexpensive, hydrophilic, compatible associated with less regulatory issues and can be modified depending upon their use and are renewable also provides nutrition supplement. Also these have wide variety of pharmaceutical applications like they can be used as diluents, disintegrants etc and also used in textile industry, paper making etc. So the use of gums, mucilages, and compounds like rosin, pectin, inulin, khaya gum, xanthenes and derivatives of these compounds are proven to be effective in various aspects of pharmaceutical formulation and also consumers look for the natural ingredients in food, drugs and cosmetics and believe that anything natural will be more safe and effective. So there is a tremendous increase in demand for use of natural excipients.

MQA 104

ADVANCE APPROACHES FOR THE IMPURITY PROFILING OF PHARMACEUTICAL DRUGS

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In the pharmaceutical world, an impurity is considered as any other organic material, besides the drug substance, or ingredients, arise out of synthesis or unwanted chemicals that remains with API's. The impurity may be developed either during formulation, or upon aging of both API's and formulated API's in medicines. The presence of these unwanted chemicals, even in small amount, may influence the efficacy and safety of the pharmaceutical products. Any material that affects the purity of the material of interest viz. active ingredient or drug substance. The impurities are not necessarily always negligible. The drug substance is compromised in terms of purity even if it contains another material with superior pharmacological or toxicological properties. Highly sophisticated instrumentation, such as mass spectrometers attached to a Gas Chromatography or HPLC, are inevitable tools in the identification of minor components (drugs, impurities, degradation products, metabolites) in various matrices.

MQA 105

QUALITY STANDARDIZATION- CHALLENGES AND OPPORTUNITIES

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The decision whether the product is 'fit for the intended purpose' is decided neither by the manufacturer nor the end user. It is however, decided by an agency which will never make the product nor, in all probability, would it be consuming it. Every once in a while, a 'new requirement' for defining the quality of a product is being added or an existing requirement is being tightened. This not only makes compliance difficult but also defeats the essence of 'cheap generics'. The water tight regulations does not allow sufficient flexibility to the pharmaceutical manufacturing to introduce dynamic changes and has made the industry extremely risk averse and least productive amongst all manufacturing sectors. Regulatory agencies and leaders of the Pharmaceutical industries are taking fledgling steps towards building flexibility in the way a pharmaceutical sector functions. The ICH Q8, Q9 and Q 10 guidelines go some distance in making the life cycle management of the pharmaceutical products less risk averse, less regulated with the onus of maintaining quality on the manufacturer. Still a number of challenges do exist in bringing full flexibility since significant capital investments and efforts are required by the manufacturers in order to reduce the regulatory oversight. Global regulatory agencies also need to come to a broad based consensus on standardization of quality requirements.

MQA 106

SOLID-PHASE MICROEXTRACTION FOR THE ANALYSIS OF BIOLOGICAL SAMPLES

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Solid-phase microextraction(SPME) has been introduced for the extraction of organic compounds from environmental samples. This relatively new extraction technique has now also gained a lot of interest in a broad field of analysis including food, biological and pharmaceutical samples. SPME has a number of advantages such as simplicity, low cost, compatibility with analytical systems, automation and the solvent-free extraction. The last few years, SPME has been combined with liquid chromatography and capillary electrophoresis, besides the generally used coupling to gas chromatography, and has been applied to various biological samples such as, e.g., urine, plasma and hair.

MQA 107

TANDEM AFFINITY PURIFICATION (TAP) METHOD

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Identification of components present in biological complexes requires their purification to near homogeneity. Methods of purification vary from protein to protein, making it impossible to design a general purification strategy valid for all cases. Tandem affinity purification (TAP) method is a tool that allows rapid purification under native conditions of complexes, even when expressed at their natural level. Prior knowledge of complex composition or function is not required. The TAP method requires fusion of the TAP tag, either N- or C-terminally, to the target protein of interest. Starting from a relatively small number of cells, active macromolecular complexes can be isolated and used for multiple applications. Variations of the method to specifically purify complexes containing two given components or to subtract undesired complexes can easily be implemented. The TAP method was initially developed in yeast but can be successfully adapted to various organisms. Its simplicity, high yield, and wide applicability make the TAP method a very useful procedure for protein purification and proteome exploration.

MQA 108

SIMULTANEOUS DETERMINATION OF PIOGLITAZONE AND GLIMEPIRIDE IN BULK DRUG AND PHARMACEUTICAL DOSAGE FORM BY RP-HPLC METHOD

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A simple, fast, and precise reverse phase, isocratic HPLC method was developed for the separation and quantification of Metformin Hcl and Glipizide in bulk drug and pharmaceutical dosage form. The quantification was carried out using Inertsil ODS (250 × 4.6 mm, 5µ) column and mobile phase comprised of Phosphate Buffer and Methanol (pH 3.5; 20mM) in proportion of 30:70 (v/v). The flow rate was 1.0 ml/min and the effluent was monitored at 240 nm. The retention time of Metformin Hcl and Glipizide were 2.200±0.1 & 5.766±0.1 min respectively. The method was validated in terms of linearity, precision, accuracy, and specificity, limit of detection and Limit of Quantitation. Linearity of Metformin Hcl and Glipizide were in the range of 0.5µg/ml to 50µg/ml and 1µg/ml to 100µg/ml respectively. The percentage recoveries of both the drugs were 98.99 to 101.55% and 99.17 to 100.47% for Metformin Hcl and Glipizide respectively from the tablet formulation. The proposed method is suitable for simultaneous determination of Metformin Hcl and Glipizide in pharmaceutical dosage form and bulk drug.

MQA 109

INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY

AN EFFICIENT TOOL FOR METAL ANALYSIS

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Inductively coupled plasma-mass spectrometry (ICP-MS) has been gaining favor with laboratories around the world as the instrument of choice for performing trace metal analysis, ICP-MS continues to makes inroads into laboratories that are requiring the lowest detection limits and the greatest level of productivity .The primary reasons for the growing popularity of ICP-MS are detects limits in part per trillion (ppt) ,analytical working range is nine orders of magnitude, productivity is unsurpassed by any other technique ,isotopic analysis can be achieved readily .The components of ICP-MS are sample introduction system in which samples are introduced into an argon plasma as aerosol droplets ,ICP torch and RF coil for generation of argon plasma which serves as the ion source of the ICP-MS, vaccum system, collision/reaction cell, ion optics ,mass spectrometer ,detector , data handling and system controller . ICP-MS is an ideal choice for the laboratory that is seeking the lowest possible detection limits and the highest level of productivity available. The technique is relatively free from interferences ,and the interferences that do exist can be often be reduced or removed through the use of a universal cell operating in either the collision mode or the reaction mode. Many laboratories find the ability to measure specific isotopes of an element invaluable. Some of hyphenated techniques of ICP-MS are Liquid Chromatography-Inductively coupled plasma –mass spectrometry, Laser ablation- Inductively coupled plasma mass spectrometry and Gas chromatography- Inductively coupled plasma –mass spectrometry.

BQA 101

METHOD DEVELOPMENT FOR SIMULTANOUS DETERMINATION OF PHARMACEUTICAL FORMULATION USING HPLC ANALYSIS

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A simple , economical , specific and precise high performance liquid chromatography method for development of pharmaceutical formulations by using HPLC with different chromatographic conditions such as mobile phase , type of Colum , flow rate , wavelength ...etc , to get new developed method used by industries .The new developed method can be useful to save the time of analysis of pharmaceutical formulations such as retention time and run time , so when the time got reduced this will lead to reduce the quantities of materials used like solvents consumed, samples and other materials then will reduce the cost of method of analysis .finally , the developing method of analysis by HPLC has the benefit of saving the time , energy and mony in quality control of pharmaceutical formulations in any industry to get (GMP)good manufacture practices .

BQA 102

ULTRA VIOLET-VISIBLE SPECTROSCOPY

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Spectroscopy is often used in physical and analytical chemistry for the identification of substances through the spectrum emitted from or absorbed by them. Spectroscopy is also heavily used in astronomy and remote sensing. Most large telescopes have spectrometers, which are used either to measure the chemical composition and physical properties of astronomical objects or to measure their velocities from the Doppler Shift of their spectral lines. UV-Visible spectroscopy is a form of Absorption spectroscopy. Absorption spectroscopy in the UV-Visible region is to be one of the oldest and most frequently employed techniques in pharmaceutical analysis for qualitative, quantitative and structural analysis of a substance in solution. The substance is analyzed by studying the spectrum produced by it due to absorption of certain wavelengths of UV-Visible light. Spectroscopically, visible light behaves in a similar way as UV light. Hence, the techniques of UV spectroscopy and visible spectroscopy are studied together.

PHARMACY PRACTICE

MPP 101

REGULATORY NETWORK IN PHARMACEUTICAL INDUSTRY

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The global regulatory affairs groups within different pharmaceutical companies have different organizational structures and functional reporting. However, most are comprised of fundamental units that house the various specialists or experts within the regulatory function. The global regulatory affairs group has traditionally resided within the research and development group of biopharmaceutical companies, but that, too, is evolving. The Drug Regulatory Affairs regulate pharmaceutical business through designing appropriate laws (rules) and enforcing the same so that the drugs meeting the highest standards of Quality are brought into the Global Trade. Rules and regulations are being prepared considering Global, Regional and National pharmaceutical trade as well as necessity of the drugs based on patient population. Most of the national guidelines for drug development and marketing authorization application are defined based on Global and Regional Harmonized guidelines. Under Drug Regulatory Affairs section, the present study showed the link of Global, Regional as well as National Regulatory Network. The Regulatory Affairs professionals are very critical and important for deciding the entry strategy into various national and international business of pharmaceutical industry. Regulatory network in pharmaceutical industry indicates that communication and advice to various departments in industry is very essential and play an active role in defining guidelines nationally and internationally.

MPP 102

ROLE OF REGULATORY AGENCIES IN APPROVAL OF NANOTECHNOLOGY PRODUCTS

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Regulatory bodies across world have long encountered the combination of promise, risk, and uncertainty that accompanies emerging technologies. Nanotechnology is not unique in this regard. Materials can exhibit new or altered physicochemical properties at nanoscale dimensions, which can enable the development of novel products. The very changes in biological, chemical and other properties that can make nanotechnology applications so exciting, and also may merit examination to determine any effects on product safety and effectiveness. The application of nanotechnology may result in product attributes that differ from those of conventionally-manufactured products, and thus evaluations of safety or effectiveness of FDA-regulated products that include nanomaterials or otherwise involve the application of nanotechnology should consider the unique properties and behaviors that nonmaterial may exhibit. Consistent with Executive Order 13563 on improving regulation, as well as with the White House policy statements on regulating emerging technologies and applications of nanotechnology, FDA supports innovation and the safe use of nanotechnology in FDA-regulated products under appropriate and balanced regulatory oversight. By enhancing its scientific expertise and tools necessary to assess the safety and effectiveness of products, FDA is maintaining its product-focused, science-based regulatory policy. Where premarket review authority exists, attention to nanomaterials is being incorporated into standing procedures. Where statutory authority does not provide for premarket review, consultation is encouraged to reduce the risk of unintended harm to human or animal health. Industry remains responsible for ensuring that its products meet all applicable legal requirements, including safety standards.

MPP 103

COMPARATIVE STUDY OF DOSSIER FILE SUBMISSION PROCESS OF DRUG PRODUCT IN USA AND EUROPE

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Dossier is a file document submitted based on the requirement of the approval of the drug product. It is essential to submit dossier file in the form of the technical document in USA, Europe and Japan. Generic drugs are approved under ANDA submission in USA and in the form of MAA submission in Europe. CTD dossier is divided in five modules such as administrative and prescribing information, overview and summary of modules 3 to 5, quality overall summary (pharmaceutical documentation), non clinical document safety (toxicological studies) and clinical document efficacy (clinical studies). After compilation, dossier is submitted to regulatory authorities. The Common Technical Document (CTD) is a set of specification for application dossier for the registration of Medicines and designed to be used across Europe, Japan and the United States. It was developed by the European Medicines Agency (EMEA, Europe), the Food and Drug Administration (FDA, U.S.) and the Ministry of Health, Labour and Welfare (Japan). The CTD is maintained by the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH).

MPP 104

PROGRESS IN THE TREATMENT OF CANCER BY HIPEC

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The American Cancer Society estimates that in 2013, 15,500 women will die of ovarian cancer in the United States. Women with ovarian cancers are living longer lives and have a better quality of life as a result of advances in treatment and an improved understanding of the disease. While chemotherapy once had an extremely modest effect on ovarian cancer, today's treatments are much more effective at shrinking tumors and driving the disease into remission, for all stages of the disease. Recent studies have shown that ovarian cancer is not one disease, but a spectrum of related diseases with unique genetic characteristics which may influence response to treatment. With these discoveries there is new potential to develop personalized treatment regimens that are most effective and result in fewer side effects. Most ovarian cancers respond well to initial chemotherapy, but the disease frequently reoccurs and more effective drugs are urgently needed to prevent and fight these recurrent tumors. New research offers reason for optimism. Cytoreductive surgery with HIPEC (hyperthermic intra peritoneal chemotherapy) is the latest intervention in the treatment of ovarian cancers. The goal of this surgery is to remove all the visible tumors, however, sometimes very small tumors and microscopic cancer cells are left behind and to prevent these cells from growing larger tumors in the abdomen the surgery is followed with HIPEC.

MPP 105

HYPERTENSION INDICATION: DRUG LABELING FOR CARDIOVASCULAR OUTCOME CLAIMS

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This guidance is intended to assist applicants in developing labelling for cardiovascular outcome claims for drugs that are indicated to treat hypertension. With few exceptions, current labelling for antihypertensive drugs includes only the information that these drugs are indicated to reduce blood pressure; the labelling does not include information on the clinical benefits related to cardiovascular outcomes expected from such blood pressure reduction. However, blood pressure control is well established as beneficial in preventing serious cardiovascular events, and inadequate treatment of hypertension is acknowledged as a significant public health problem. Food and Drug Administration (FDA) believes that the appropriate use of these drugs can be encouraged by making the connection between lower blood pressure and improved cardiovascular outcomes more explicit in labelling. This guidance recommends standard labelling for antihypertensive drugs except where differences in labelling are supported by clinical data. We encourage applicants to submit labelling supplements containing the new language. FDA's guidance documents, including this guidance, do not establish legally enforceable responsibilities. Instead, guidance's described the Agency's current thinking on a topic and should be viewed only as recommendations, unless specific regulatory or statutory requirements are cited. The use of the word should in Agency guidance's means that something is suggested or recommended, but not required.

MPP 107

INCRETINS-GLUCOSE HOMEOSTATSIS AND DIABETESTREATMENT

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Incretins are gut hormones that are secreted from enteroendocrine cells into the blood within minutes after eating. One of their many physiological roles is to regulate the amount of insulin that is secreted after eating There are two incretins, known as glucose-dependent insulinotropic peptide (GIP) and glucagon-like peptide-1 (GLP-1), that share many common actions in the pancreas but have distinct actions outside of the pancreas. Both incretins are rapidly deactivated by an enzyme called dipeptidyl peptidase 4 (DPP4). Two new classes of drugs based on incretin action have been approved for lowering blood glucose levels in T2DM: an incretin mimetic (exenatide, which is a potent long-acting agonist of the GLP-1 receptor) and an incretin enhancer (sitagliptin, which is a DPP4 inhibitor). Exenatide is injected subcutaneously twice daily and its use leads to lower blood glucose and higher insulin levels, especially in the fed state. DPP4 inhibitors are orally active and they increase endogenous blood levels of active incretins, thus leading to prolonged incretin action.

BPP 101

CHALLENGES TO THE PHARMACISTS ACROSS THE FEW DEVELOPED COUNTRIES

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Ensuring accurate dispensing of prescribed medicines against prescriptions and providing sound advice on self-medication remain are parts of the service provided by pharmacists. They have, however, recognized for some years that equally important roles or to advise other health care professionals on safe and to ensure that medicines are used safely and effectively. Pharmacist's professional roles and responsibilities have evolved historically from a focus on medication compounding and dispensing to extended pharmaceutical care services. Pharmacists are again treated with high regard as professionals. Pharmacists were seen as medical doctor's assistants in some countries, one who followed instructions with rare personal initiatives. This could be the reason challenging pharmacists across the world. In United States, as per the recent survey by FDA, some internet pharmacies are decisive legitimate business that offers an unsafe and costly way for consumers to obtain medicines. Those websites are commonly known as "rogue". In Canada, that healthcare system faces many challenges and it is probable that this will continue to characterize the environment within which hospital pharmacists operates. In Australia, the health system showing stress from ageing population increase in chronic diseases and reduce ability for the public to easily access doctors. In Europe, 194.500 deaths a year in the EU are due to miss dose and non-adherence of prescribed medication. In France, the most significant obstacles were remuneration, working time and organizational and technical problems. Conclusion is that different countries offer different challenges to health professionals in spite of having universal definition of health. The future of pharmacy services is really in developing the clinical pharmacy role as means of delivering quality assured use of medicines. This could possibly achieve with bringing equal standards to pharmacists and pharmacy profession across the world based on all challenges.

BPP 102

BIOSIMILARS

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Biosimilars are biological medical products whose active drug substance is made or derived from living organisms using biotechnological methods. As the patents of first generation biopharmaceuticals are on their way to expiration, Biosimilars are gaining importance. They are unofficially known as biogenetics. However, the process of introducing a Biosimilars product is more complex than that of a chemical generic. They are "similar" but not the same. It puts forth various opportunities for a pharmacist. They have been extensively used in anemia, HIV and other diseases. Treatment benefits are many, but it all comes down to the quality, safety and efficacy of the product. Many countries have accepted these products even though there is a slight variation from the innovator product, due to the cost reduction. Due to variance from the innovator product, pharmacovigilance also plays a major role. Awareness among health care professionals is a must to understand the complexity of Biosimilars. Most recently, U.S has accepted usage and marketing of Biosimilars medicines. In the U.K, this form of medicine has been present for some time now. India is venturing into this option by weighing the pros and cons regarding cost reduction and safety. Clinical trials are still in process.

BPP 103

ENHANCING THE ROLE OF THE PHARMACIST AS A PATIENT CARE ADVOCATE AND HEALTHCARE PROVIDER WITH THE HELP OF INNOVATION IN PRACTICE AND USE OF MODERN TECHNOLOGY

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In India we get to see that community pharmacies and the community pharmacists are not seen as centers of patient care advocacy and patient care. Pharmacy graduates do not consider the role of the community pharmacist to be lucrative career option and see it in an all new different way. In reality it's not so. The present project outlines the key specific areas that when implemented into the pharmacy practice setting would make the neighborhood drugstore a place where healthcare development in a holistic manner can be accomplished. This is seen to be achieved by embracing the following categories of innovations: Collaborative primary health care teams; expanded prescribing authority; chronic disease management; health promotion and disease prevention; post-hospitalization continuity of care and medical reconciliation; consulting and cognitive services; enablers of innovative pharmacy practice-innovation automation, information and communication technology, and pharmacy technicians. The need of the hour is to transform the community pharmacies across India and this can be achieved by implementing these above mentioned ideas into every pharmacy practice settings thus making the community pharmacy and community pharmacist a strong pillar in the health care delivery system.

BPP 104

PHARMACOVIGILANCE

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Pharmacovigilance is the pharmacological science relating to the collection, detection, assessment, monitoring and preventing adverse effects with pharmaceutical products. It contributes protection of public health in the regulation of safety, quality and efficacy of medicines used. Medicines play a key role in treatment of infections and diseases. Some of the drugs produce adverse effects on human body with their therapeutic use. Clinical trials are made on people before making the drugs available in the market, but all adverse effects may not be known at that time. Clinical trial tells us about how well the drug works and what potential harm they cause to human body if any. Patients with multiple drug therapy are more prone to develop adverse drug reaction either due to alteration of drugs or synergistic effect. Elderly and pediatric patients are more likely to develop adverse effects due to physiological changes accompanying aging, multiple diseases. Some drugs are highly toxic in nature and patients treated with these drugs are at increased risk of adverse effects.

BPP 105

WHY GENERIC MEDICINE?

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People increasingly face the choice of branded drugs or generic drugs and the decision is sometimes difficult. Branded drugs play an important role in medications, but generics are their cost effective alternatives. Generics are similar to branded drugs in terms of purity, efficacy and are perceived to be safer as compared to new drug molecules, as they tend to be older and time tested. the present research work is designed to determine the benefits of generic versus branded medicines. Indian pharmaceutical market of generic drugs is increasing day by day. In India, the scope of generic drug manufacturing has increased. A large number of people are living below poverty line. They are not able to afford branded drugs because many a times these drugs are too much expensive. India is the 4 th largest market in terms of production of generic medicines and ranks 13th in terms of consumption value Moreover, India accounts for 22% of the world market of generic drugs .Today 95% of the country's medical needs are served by Indian Pharmaceutical industry. Indian pharma sector exports 32%, of which 90% is generic and marketing growth is about 20% per annum. Generic drugs are effective, safe and bioequivalent as branded drugs. The generic drug market is increased due to expiry of patents and also by winning of Para IV filing cases. Once the patent expires, there is a great competition in the market and therefore, the price of a particular molecule gets decreased. the Indian pharmaceutical sector has tremendous opportunities for generic drugs in the times ahead.

BPP 106

IMPACT OF ADVERTISEMENT ON USE OF DRUGS/FOODS, VIOLATION OF ACTS AND HEALTH RISKS.

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A consumer is the end user of any product which the purchases on influence and belief of the advertisement. The advertisements on promotion of pills as 'weight reduction, skin wrinkle free, growing hair, treatment in sexual impotence/sterility etc.,' are drawing attention of cavil society. Though the regulatory provisions viz.," The misleading advertisements relating to drugs and magic remedies are taken care of by the Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954 and Rules made there under' in India appearance of mentioned claims is rampant . The current study is undertaken with an objective to screen advertisements which are claimed as weight loss/gain treatment of alopecia, potency improving pills energy/immunity booster pills in print media. Collection of information from three regional and two English daily news papers. The advertisement on pills / therapy for obesity, hair fall, sterility, energy / immune booster have been screened on weekend days of last six months. This was followed by compiling and analyzing the data. Misleading advertisements in the district (1320), regional (960), national (780) newspaper were published in Andhra Pradesh. Every 2 out of 3 of these advertisements were for reducing weight gain, and baldness. This was followed by advertisements on pills recommended for promotion of sexual potency curing asthma, constipation & Gastric disorders. The advertisements on 'Beauty creams, hair oils and other products mentions use as they are without any side effects. Conclusion: The study results suggest that majority of products had created false impression regarding the true character directly or indirectly, false therapeutic claim, or misleading information thus violating the drugs and magic remedies Act, 1954.

BPP 107

THE IMPACT OF THERAPEUTIC REFERENCE PRICING ON INNOVATION IN MEDCINE IN PHARMACY FIELD

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Therapeutic reference pricing (TRP) places medicines to treat the same medical condition into groups or 'clusters' with a single common reimbursed price. Underpinning this economic measure is an implicit assumption that the products included in the cluster have an equivalent effect on a typical patient with this disease. 'Truly innovative' products can be exempt from inclusion in the cluster. This increasingly common approach to cost containment allocates products into one of two categories — truly innovative or therapeutically equivalent. This study examines the implications of TRP against the step-wise evolution of drugs for diseased conditions over the past 50 years. It illustrates the complex interactions between advances in understanding of cellular and molecular disease mechanisms, diagnostic techniques, treatment concepts, and the synthesis, testing and commercialization of products. It confirms the highly unpredictable and incremental nature of the innovation process. A framework is developed to assess the impact of TRP upon research and development investment decisions and the development of therapeutic classes. We conclude that a simple categorization of products as either 'truly innovative' or 'therapeutically equivalent' is inconsistent with the incremental processes of innovation and the resulting differentiated product streams revealed by our analysis. Widespread introduction of TRP would probably have prematurely curtailed development of many incremental innovations that became the preferred 'product of choice' by physicians for some indications and patients in managing the incidence of disease.

BPP 108

ORAL INSULIN- NEEDLE FREE DRUG DELIVERY SYSTEM

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For most patients with type 1 diabetes, the worst part of the disease is to tolerate needle after needle, both for glucose measurement and to deliver insulin. The development of an oral dosage form of insulin would help diabetic patients and make the treatment more convenient. Oral insulin evaluated in diabetic rats. The aim of present study is to evaluate the effectiveness of an oral insulin formulation. Over 10 billion needle injections are given worldwide every year, yet they are disliked by most patients so it is an added advantage to belenophobics (fear of injectables). In today's era, insulin delivery by alternative route is a topic of current interest in the design of drug delivery system. The novel and emerging technologies include insulin inhalers, insulin spray, insulin pill, insulin analogues, etc. A delivery system providing an improved efficacy of orally administered insulin utilizing a thiolated polymer. The therapeutic agent was sustained released from these tablets within 5 h. In vivo, by oral administration to diabetic mice, the glucose levels were found to decrease of about 40% since the third hour from administration and the biological activity was maintained up to 30 h. According to these results, the combination of PEGylated insulin with a thiolated polymer used as drug carrier matrix might be a promising strategy for oral insulin administration. Oral delivery of Insulin as a non-invasive therapy for Diabetes is still a challenge to the drug delivery technology, since it is degraded due to the presence of enzymes in the acidic environment of stomach and also its absorpt ion through the gastrointestinal mucosa is questionable. The other types of needle free insulin delivery are: Insulin spray, Insulin pill. **BICON**'s oral insulin will take few more years to hit market (September 14, 2013). Clinical trail under U.S.FDA is in phase 2a in type 2 diabetes (First patient in July 2013). Oral delivery is a physiological route for insulin administration. Improved disease management, the enhancement of patient compliance and the reduction of long-term complications of diabetes such as hyperinsuliaemia, weight gain could be achieved by oral application. The absorption of insulin is the major obstacle.

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