Proceedings

AERB Sponsored National Seminar

Challenges and Opportunities *of* Nuclear Medicine in Health Care

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NATIONAL SEMINAR

PROGRAMME SCHEDULE

Time	Activity	Venue
09:00 am -10:00 am	Registration, Kit distribution & Breakfast	Auditorium
10:00 am -11:00 am	Inaugural Function	Auditorium
PLENARY LECTURES		
11:00 am -12:00 am	Dr. Virendra Bhandari, MBBS, MD (Oncology-Radiation), UICC, ICRO	Auditorium
12:00 am - 01:00 pm	Dr. Vinay Saini Senior Scientist, IIT, Mumbai	Auditorium
01:00-02:00 pm LUNCH		
02:00 pm – 03:00 pm	Dr. Sharad Gupta Assistant Professor, IIT, Indore	Auditorium
03:00 pm – 04:00 pm	**Oral/ Poster Presentation**	
04:00-04:15 pm HIGH TEA		
4:15-05:00 pm	Award ceremony and Valedictory Function	Auditorium

Chief Patron
Shri Vinod Kumar Agarwal
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Patron
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Chief Patron
AERB National Seminar, 2019

Message

It gives me immense pleasure and satisfaction that **Chameli Devi Institute of Pharmacy** is organizing an **AERB sponsored** one day National Seminar on **"Challenges and Opportunities of Nuclear Medicine In Health Care"** on 02nd February 2019.

I hope that the event will provide a highly stimulating and interactive platform for all the delegates, to explore and exchange the latest ideas and advancements in health care system. Seminar is composed of lectures by distinguished speakers, plenary talk, keynote addresses and technical papers and presentations to address various challenges and innovations in the field of Pharmaceutical Science and Nuclear Medicine.

I am really delighted to send my best wishes to the organizers and participants of National Seminar and wish all the success for the seminar.

Vinod Kumar Agarwal
Chairman
CDGI, Indore

Patron
AERB National Seminar,2019

Message

I am very glad to know that **Chameli Devi Institute of Pharmacy** is organizing **AERB sponsored** one day National Seminar on "**Challenges and Opportunities of Nuclear Medicine In Health Care**" on 02nd February 2019 and releasing a souvenir to mark the event. Chameli Devi Institute of Pharmacy is one of the most vibrant departments and has been actively contributing to the needs and demands of the society at large in fostering academic research and developments.

Seminar is meant essentially for scientific exchange and generation new ideas in the chosen field along with personal interaction. I hope that this seminar will disseminate innovative ideas in new and emerging technologies in nuclear medicines.

I congratulate the organizers for their initiative and attracting a wide range of papers from experts in their fields. I wish all the speakers and delegates a most informative and enjoyable seminar.

I extend my best wishes for the success of seminar and release of souvenir.

Sanjay Kumar Agarwal
Vice-Chairman
CDGI, Indore

Patron
AERB National Seminar,2019

Message

I have immense pleasure in writing this message on the occasion of the National Seminar on **"Challenges and Opportunities of Nuclear Medicine in Health Care"** hosted by the **Chameli Devi Institute of Pharmacy, Indore** on 02nd Feb 2019.This seminar will provide a platform to groom young scientists from all over the country and to bridge the researchers working in academia and other professionals through current technological trends. It is a high time to create research activities among the budding professionals. May this Conference provide greater opportunities for every member of this speciality to learn more and let this learning be of immense help to the community at huge. I congratulate the organizers for their initiative and wish the Conference all success.

Dr. Joy Banerjee
Group Director
CDGI, Indore

Convener
AERB National Seminar,2019

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

Warm Greeting to All !!!!!

It gives me an immense pleasure that **Chameli Devi Institute of Pharmacy** is organizing the National Seminar with the theme of **Challenges and Opportunities of Nuclear Medicine in Health Care** on 02nd Feb 2019. The conference is aimed to provide the platform for industrialists, educationists, researchers and students to debate and discuss on the vital need of research. The unique event will explore the significance of nuclear medicine and scanning. The seminar with your support is putting its best efforts to conduct this mega event in a befitting manner, considering the importance of nuclear medicine and scanning techniques. The theme of the seminar seeks to not only strengthen our commitment towards the ideals of our specialty, but also to encourage us to look ahead and stay abreast of the latest developments in nuclear medicine and academic research. The entire seminar will be addressed by eminent scientists and professors as key note/invited speaker while it will also attract young researchers, faculties and students across the country, who will take part as poster presentations. I extent my warm welcome to the resource persons young researchers, budding Pharma professionals, eminent scientists, guests, faculties, and industrialists in this splendid conference and wish the conference a great success. I hope all the delegates will derive maximum benefit from this event and take back fond memories of the Indore experience!

Best wishes…

Jai Hind

Dr. Arun Kumar Gupta
Principal
CDIP, Indore

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CDIP/AERB/01

ANTI-ALZHEIMER ACTIVITY OF TERMINALIACATAPPA BY STREPTOZOTOCIN INDUCED ALZHEIMER

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ABSTRACT

The present investigation deals with the assessment of neuroprotective effect TerminaliaCatappaseed extract (TCSE) in Alzheimer diseased (AD) rat. Alzheimer disease was induced by administering streptozotocin (3 mg/kg, ICV). Streptozotocin induced AD rats were treated with hydroalcoholic extract of TerminaliaCatappa seed extract (100 and 200 mg/kg, p.o.) for 14 days. Effect of TerminaliaCatappa seed extract in AD rats was assessed by estimating inflexion ratio in the (Elevated maze apparatus), biochemical parameter in the brain tissue like superoxide dismutase, catalase, and contents of thiobarbituric acid reactive substances, reduced glutathione and acetylcholinesterase. Treatment with TerminaliaCatappaseed extract (TCSE) shows significant ($p<0.01$) increased in inflexion ratio in the behavior and transfer latency in elevated plus maze. TerminaliaCatappa seed extract (TCSE) significantly ($p<0.01$) reduced level of acetylcholinesterase in the brain tissue compared to AD rats. Whereas, treatment with TerminaliaCatappa seed extract (TCSE) significantly reduces the oxidative stress level in AD rats. The present study concludes the neuroprotective effect of TerminaliaCatappa seed extract (TCSE) in AD rats by reducing oxidative stress, and AchE in the brain tissue.

Keywords: TerminaliaCatappa seed extract, Acetylcholinesterase,Superoxide dismutase (SOD), catalase (CAT), contents of thiobarbituric acid reactive substances (TBARS) and reduced glutathione (GSH)

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CDIP/AERB/02

HERBAL NEBULIZER (GINSENG)

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ABSTRACT

This research sought to prepare the herbal nebulizer. As we knownebulization and atomization is a technique of converting liquid into a fine mist and the machine used for this particular purpose is called nebulizer. Nebulizer instrument are of three types Jet nebulizer, ultrasonic nebulizerand mesh nebulizer. The herbal nebulizer could include the effect of herb with advanced technology. Allopathy drugs have a drawback that exceeding the prescribed dose can be dangerouswith resultant cardiaceffect,hypokalaemia,tastealteration,nausea,restlessness,sweating,headache or tremor while theusing of herb can overcome these all side effects. The herbal drug used as nebulizer for treating asthma and COPD .They are liquorice,thyme,English ily(Hedera Helix),ginseng(panax ginseng),curcumin,red sage.The presented research include various features of nebulizer with the advantages, disadvantages and formulation aspects of nebulised drug delivery system.Other than this the inhaler therapy using nebulizer is commonly used for local and systematic drug delivery through lungs. The use of nebulization technique is more suitable and preferable for children, which require additional use of a face mask. This could be an new modification of the herbal drug with an scientific instrument which does not requires a especial attention or any one6 could use it without any specialization.

Keywords: Nebulizer, Inhalation, Herbal, COPD, Allopathy.

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CDIP/AERB/03

A REVIEW ON HEBRAL REMEDIES FOR VIRAL INFECTION, HIV AND LIVER DISORDER

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ABSTRACT

The rising number of patients with viral infection, HIV, and liver disorder was noticed due to overwhelming usage of drugs has paved the path for researchers in an interest in herbal medicines. These diseases still remain an area of medicine for which specific treatments are lacking. Herbal medicines provide rational means for the treatment of these diseases. Herbal medicines can be developed as a safe, effective and economical alternate. The herbal drugs which are used for treatment of viral infection are Ginseng, Tobacco, Hypercium, Eucalyptus, Pepermint etc. The herbal drugs which are used for the treatment of AIDS are Kalmegh, Betel nut, Turmeric, Clove, Liquorice etc. The herbal drugs which are used for the treatment of Liver disorders are Liquorice, Milk thistle, Liv-52, Green tea etc.

Many compounds of plant origin that inhibits various stages of cell cycle which includes several alkaloids, carbohydrates, coumarine, flavanoids, lignin, phenolics, proteins, cunnins, xanthenes, phospholipids and tannins. These candidates have the potential to come up as a drug for treatment for various diseases.

So the aim of this review article is to identify plants and their active principles possessing activities against viral infection, HIV and Liver disorders with the objective of providing an effective approach for prevention of transmission and treatment of these diseases.

Keywords: Medicinal plants, Herbal remedies, HIV, Liver disorder, viral infection.

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CDIP/AERB/04

A REVIEW ON HERBAL TRANSDERMAL PATCH FOR ARTHRITIS

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ABSTRACT

In a conventional medicine system the oral routes is highly taken but the dose do not give effective or desired effects because of systemic Circulation, the first pass metabolism taken more time to get bioavailable or give therapeutic effects. So Transdermal drug delivery has made an important contribution to medical practices. It is a medicated patch that delivers a specific amount of medication through the skin into the blood stream. An advantage of a transdermal drug delivery routes over other type of medication deliveryis that the patch provides a controlled release of the medication into the patient, usually through either a porous membrane covering a reservoir of medication or through body heat melting thin layers of medication embedded in the adhesive.

This formulation consist herbal drugs, now days herbal drug are more used they are safe because of having less side effects or low cost and people trust herbal drug more than allopathy. The active drugs which are used to formulate herbal transdermal patches for arthritis are Ginger, Turmeric, lavender, katuvera, clove oil, wintergreen, camphor, Menthol, aloeVera, Turpentine. These herbal drugs are very effective in arthritis and they are potent to formulate transdermal dosage form. Formulated transdermal drug delivery system using different polymeric grade of hydroxyl proply methyl cellulose and with Plastsizer propylene glycol. The Transdermal patches prepared are of matrix diffusion controlled system. Solvent casting Technique was used to prepare the transdermal patches.

Keywords: Transdermal Patch, Allopathy, Plasticizer

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CDIP/AERB/05

IN VITRO EVALUATION OF ALDOSE REDUCTASE INHIBITORY POTENTIAL OF SYZYGIUM AROMATICUM LINN.

DUBEY KUSHAGRA*, DUBEY RAGHVENDRA#, GUPTA REVATHI A#, GUPTA K ARUN#

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ABSTRACT

Flower Bud extracts of Syzygium Aromaticumwas evaluated by in-vitro aldose reductase inhibitory activity. The dried flower bud powder of Syzygium AromaticumLinn was soxhlet extracted with Methanol (80%) and Distilled water. Both the extracts were screened for in vitro aldose reductase inhibitory activity in purified goat lens using Hayman and Kinoshita method in which decrease in NADPH concentration was estimated at 340nm using UV Visible spectrophotometer. From the result it was observed that both the extracts inhibit AR activity, but at different extent. From dose response curve it was found that methanolic extract (ME) is more effective then aqueous extract (AE) with IC_{50} values of 48.86 ±0.33 µg/ml and 93.18 ±1.13 µg/mlrespectively.In the end it was concluded that among the two extracts, Methanolic extract of Syzygium AromaticumLinnis potent in inhibiting the aldose reductase enzyme which contribute major role in the diabetes complication.

Keywords: Aldose Reductase, Goat Eye Lens, NADPH, Methanolic Extract, Aqueous Extract.

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CDIP/AERB/06

A REVIEW ON PROBIOTIC AND A NEW CONCEPT OF TREATMENT

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ABSTRACT

Theconcernaboutundesiredsideeffectsofuseofantibioticsastherapeuticagentswhichleads to imbalance between the beneficial and harmful microorganism making our body more susceptibletoinfections,Probioticslivingmicroorganismareaddedtofoodwhichbeneficially affects the host by improving its intestinal microbial balance and Prebiotics are the non- digestible dietary supplements are used which modify the balance of the intestinal microflora by stimulating the growth and activity of beneficial organism. Numerous scientific reports confirmtheirpositiveeffectsinthehosthealth.Probiotic microorganismsareattributedahigh therapeutic potential in Ex-obesity, insulin resistance syndrome, type 2 diabetes, and non- alcoholSteatohepatitis.Nowadaythere isagrowingtrendofthemarket forfunctionalfood based on Probiotics. Finally, the understanding of the mode of action of Probiotics microorganism may be a powerful tool to design new strategies for the prevention and treatment of specific humandisease.

Due to methodological difficulties and insufficient knowledge of the composition of "Health intestinal microbial" and the complex interaction between its members, it is hard to deduce concert preventive or curative health effects from changes in bacterial cell count as a consequences,proofofhealth-relevanteffectsincontrolledhumaninterventionstudiesshould beanalyzed.

Hence, Prebiotics and probiotics have potential nutritional advantages leading to preventive and occasionally curative effects against certain disease and might directly or indirectly induced similar immunomodulation effects.

Keywords: Probiotics, prebiotics, Microbial flora, Antibiotics.

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A REVIEW ON PLANTS HAVING ANTI-INFLAMMATORY POTENTIAL

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ABSTRACT

Many Indian medicinal plants have anti-inflammatory potential. Inflammation is a healthy course of action that may occur due to some pathogenic or diseased situation of our body. The symptoms associated with inflammation are heat, swelling, redness, persistent pain, loss of function etc. Inflammation plays a vital defensive role in our body and in some conditions produces some undesirable effects like rheumatoid arthritis, osteoarthritis, retinitis, multiple sclerosis, psoriasis and atherosclerosis. For overcoming this problem many anti- Inflammatory plants can be used to prevent inflammation. These plants such as Chirata (Swertia Chirata), Piplilong (Piper Longum Linn.), Paraspipal (Thespesia Populnea), Bachnag (Aconitum Napellus Linn.), and Parijat (NyctanthesArbor-Tristis) are introduced in this review. The present review is an approach to get on insight into various plants having anti inflammatory potential.

Keywords: Anti-inflammatory activity, inflammation, Swertiachirata, Piper longumlinn, Aconitum napelluslinn, Nyctanthesarbor-tristis.

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HERBS: USED AS ANTIOXIDANTS

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ABSTRACT

Antioxidant substances that reduce damage due to oxygen, such as that caused by free radical well known are cell damage. Antioxidant is found in many foods including fruits & vegetables. Although reaction is crucial for life they can also be damaging plant and animal maintained complex system. Antioxidant are role health & disease are antioxidant act as free radical scavengers play a protective role in many age related in chronic inflammatory disease, coronary artery disease, alziemer disease, cancer etc. Antioxidant phytoconstituents among natural food antioxidant are phenol, amino acid, protein, flavonoids, phenolics, ascorbic acid & carrenoids antioxidant are found in plant and some common fruits and vegetables like lemon, garlic, ginger ,black berrie , strawberries ,raspberries , walnuts, ground clove etc. All products are important in human daily life. Using any person they are fit and young in large time .South Africa WHO are regulate in over country first time regulate in 2002-2003 they all treatment of any person are apply only in Ayurvedic treatment and antioxidants.

Keyword: Antioxidants, Herbs.

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MOLECULAR DOCKING AND ADME STUDIES ON BENZIMIDAZOLE DERIVATIVES AS A THEREAUPTIC AGENT IN TREATMENT OF FUNGAL DISEAES

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ABSTRACT

*Candida albicans*can cause infections that range from superficial infections of the skin to life-threatening systemic infections (fungal infections). Overgrowth of these organisms can cause symptoms to develop. Docking study was carried out on 30 benzimidazole derivatives using molegrow virtual docker 6.0. ChemDraw 3D was used for structure minimization. PDB code: 1AOE Candida albicans dihydrofolate reductase complex was used for the study. The study showed that the most active compound binds to the active site of the protein. Whereas compound C28, C25, C21, C22, and C26 showed high calculated binding free energy as compared to standard co-crystallized ligand a. ADME study was performed on the selected analogues.

Keywords: *Candida albicans*, Antifungal, Benzimidazole derivatives.

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RATIONAL DESIGN SYNTHESIS AND ANTIMALARIAL ACTIVITY OF 4-AMQ-CHALCONE CONJUGATES

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ABSTRACT

Despite the availability of large number of anti-malarial agents, the treatment for malaria is still continued to be a challenging task. There are many reasons to be cited for this fact and primarily, the malaria parasites developed resistance against many existing anti-malarial agents. Therefore, the discovery and development of newer anti-malarial agents are vital to combat the resistance malaria. One important aspect of tackling resistance malaria is to treat with a combination therapy. Herein, we attempted to develop novel therapy by hybridizing two active molecule of having different mechanisms. Hybridizing the structures of 4-aminoquinoline and chalcone to obtain anti-malarial agents expected kill resistance malaria parasite. The hybrid compounds were designed, synthesized and biologically evaluated through β-hematin formation inhibition assay.

Keywords: Antimalarial, Chalcone

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MOLECULAR DOCKING AND ADME STUDIES ON IMIDAZOLE DERIVATIVES AS ANTIPROTOZOAL AGENTS

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ABSTRACT

Trypanosomiasis is a disease caused by flagellate protozoan parasite Trypanosoma cruzi. The trypanosomes bore tissue in another organism and feed on blood and lymph. The molecular docking approach was used to study the interaction of imidazole derivatives (20 compounds) with protein (PDB code- 4YP0, Crystal structure of T. cruziHistidyl-tRNA synthetase in complex with 5-aminoisoquinoline) toanalyse antiprotozoal activity against protozoa T. cruzi.The minimization of structure was done by using Chemdraw 3D. Out of these compounds 3d, 3f, 3g, 3l, 3t showed the highest antiprotozoal activity as compared to the standard ligand. ADME study also performed over the selected analogues.

Keywords: - Trypanosomiasis, Anti-protozoal, Molecular Docking, ADME study.

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RATIONALIZATION OF PHYSICOCHEMICAL PROPERTIES OF 1, 3, 4-OXADIAZOLE SUBSTITUTED NAPHTHYRIDINE ANALOGUES AS HIV-1 INTEGRASE INHIBITORS

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ABSTRACT

Quantitative structure-activity relationship studies using the multiple regressions analysis method was performed on a series of 1, 3, 4-oxadiazole substituted naphthyridine analogues as HIV-1 integrase inhibitors. The compound in the selected series was characterized by molecular, steric, electro topological descriptors. The series was subjected to molecular modelling using CS Chem-Office 8.0. This study was performed using 63 compounds, for which QSAR models were developed using a training set of 47 compounds. The best model since it shows the best correlation coefficient R = 0.7659 and explains 79% variance in inhibition. Leave-one-out (LOO) cross validated value (Q2 = 0.6984) reflects the good predictive power of the model. Low standard deviation of the model demonstrates accuracy of the model. QSAR results show that electronic Dipole moment, LUMO and lipophilic properties of the molecules are the three most important determinants of the activity. The outcome of the study could be used for the rational design of potent anti-HIV potent.

Keywords: Naphthyridine Analogues, HIV-1 Integrase Inhibitors

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MOLECULAR MODELLING OF CLINAFLOXACIN- AZOLE CONJUGATES AS NOVEL ANTI-TUBERCULAR AGENTS

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ABSTRACT

Tuberculosis (TB) is an infectious disease that remains one of the top 10 causes of death worldwide attributable to a single infectious agent in 2015 which is usually caused by Mycobacteriumtuberculosis(MTB) bacteria. The study was performed to find predictive relationships between quantitative descriptions of physical properties of compounds and response of biological system under considerations which is known as QSAR. In the present study quantitative structure activity relationship studies were performed on a series of Clinafloxacin- azole conjugates using SYBYL-X 2.1 Software followed by selection of best model having required values for correlation coefficient(r2) and cross-validated correlation coefficient(q^2). The docking study was also performed using SYBYL-X 2.1 software to obtain C-Score and interactions that matched with pdb which was procured from RCSB website.

Keywords: Tuberculosis, Clinafloxacin

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2QSAR AND 3D QSAR ANALYSIS OF BENZOTHIOPHENE DERIVATIVES AS ANTI MALARIAL AGENTS

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ABSTRACT

In this study a series of forty two benzothiophene derivatives was selected and hologram quantitative structure-activity relationship (HQSAR), comparative molecular field analysis (CoMFA) and comparative molecular similarity indices analysis (CoMSIA) techniques were performed as anti malarial agents. The LOO cross-validated q^2 values of HQSAR, CoMFA and CoMSIA models were found to be 0.792, 0.782 and 0.723, respectively. The predictive ability of the developed models was validated by a test set of fourteen compounds. The predicted pIC_{50} values were in good conformity with the experimentally determined pIC_{50} values. The best HQSAR model was obtained using atoms, bonds, connection, donor and acceptor as fragment distinction parameter with fragment size (5-8) using a hologram length of 417 and 6 components. The fragment contribution map of HQSAR showed the presence of benzothiophene ring, presence of electronegative group at R_1 position and bulky group like long alkyl chain R_2 position is favorable for antimalarial activity. The results of HQSAR are in good agreement CoMFA and CoMSIA with results.

Keywords: Benzothiophene, Antimalarial

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PHARMACOPHORE MODELING AND DOCKING OF CHEMICALLY DIVERSE ALDOSE REDUCTASE INHIBITORS

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ABSTRACT

Aldose reductase enzyme inhibitors are useful in the treatment of type-II diabetes mellitus. With the objective of discovering new drug candidate for type-II diabetes mellitus, a pharmacophore model has been generated from the training set of 42 chemically diverse molecules having potential inhibitory effect against aldose reductase enzyme. The PHASE module of Schrodinger was used for the generation of common pharmacophore hypothesis. Among the top ten generated hypotheses, hypothesis 3 was found to be the best on the basis of statistical metrics and test set prediction. The selected common pharmacophore model has a good correlation coefficient for training (R = 0.91), test (R = 0.87) as well as for the external test (R = 0.72) sets.

The docking studies on aldose reductase target structure using Glide suggest that the binding orientation of training set molecules towards aldose reductase which are crucial for the antidiabetic activity. The docking findings corroborate with the common pharmacophore hypothesis. The pharmacophore model can be useful in virtual screening and in designing new potential antidiabetic drug candidates.

Keywords: Aldose reductase, Pharmacophore, Antidiabetic

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DESIGNING AND MOLECULAR DOCKING STUDY OF SOME FLAVONES AS A-GLUCOSIDASE INHIBITORS

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ABSTRACT

In this research work three dimensional structure of α-glucosidase enzyme was derived through homology modeling and some flavones were designed and subjected for molecular docking study on the homology modeled α-glucosidase enzyme. Compound 09 substituted with hydroxy group and methoxy group at R_1 and R_2 position respectively was found to be the potent inhibitor of α-glucosidase. It was found that compounds substituted with OH group and alkoxy groups at R_2 position respectively showed good binding affinities with the catalytic residues His348 and Asp349 respectively. Apart from this small alkyl group at R_2 position, like methyl and ethyl group showed good hydrophobic interaction with active site residues of the enzyme. But as the chain length increases binding affinity decreases due to the steric interaction with active site residues of the enzyme.

Keywords : α-glucosidase, hydrophobic

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LIGAND ASSOCIATED DRUG DELIVERY SYSTEM FOR TUMOR TARGETING

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ABSTRACT

Ligand targeted therapeutics (LTTs) has been widely used for active targeting of drug substances. The vital problems related with conventional drug administration to systemic circulation are: uniform biodistribution of pharmaceuticals in whole body; the absence of drug selectivity against a pathological site; the need for substantial drug dose for attaining higher concentration at local site; imprecise toxicity and other adverse reactions owing to higher dose of drug. Targeting of drug may rectify numerous problems. An absolute targeted delivery approach enhances the drugs therapeutic efficacy and reduces drug toxicity to permit lesser dose of the drug meant to be utilized in the therapy. Ligand targeted therapeutics (LTTs) is a favourable mode for enhancing the selective toxicity of anticancer therapeutics and numerous of them are currently in clinical trials. Ligand can bind specifically to the cell surface proteins with greater affinity to target drugs or drug-carriers to the tumor site. Numerous ligands and antibodies utilized to target ligand targeted therapeutics and some commonly used ligands are RGD, NGR, folic acid, transferin, galactosamine and hyaluronic acid. These ligands offer potential to reverse forms of both intrinsic and acquired drug resistance in solid tumours.

Key words: Targeted drug delivery, Ligand targeted therapeutics, Ligand, Antibody.

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MOLECULAR DOCKING STUDYIES ON ANTI-CANCER ACTIVITY OF SOME SUBSTITUTED 2-(1-BENZOYL-1H-BENZO[d] IMIDAZOL-2-YLTHIO)-N-SUBSTITUTED ACETAMIDES

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ABSTRACT

Breast cancer is perhaps the single most important medical concern women face today. Breast cancer is an uncontrolled growth of epithelial cells originating in the ducts or breast lobules. Molecular docking was performed and for the prediction of strongest binders based on scoring functions. Structures of analogues was created using and energy minimization was done ChemDraw 3D. Docking studies was performed using PDB code: 5V5N crystal structure of Takinib bound to TAK1 was used for anticancer activity on 20 analogues. Where, A10, A14, A11, A18 and A6 showed highest calculated binding free energy as compared to standard ligand. These selected compounds also studied for ADME analysis in-vitro.

Keywords: Breast Cancer, Molecular Docking, ADME studies invitro.

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INVESTIGATION OF ANTI MICROBIAL ACTIVITY OF IMIDAZOL [2, 1-B][1,3,4] THIADIAZOLE BY USING MOLECULAR DOCKING AND ADME STUDIES

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ABSTRACT

This report consists of molecular docking based on series of imidazol [2, 1-b] [1, 3, 4] thiadiazole-benzimidazole derivative. Molecular docking is software which gives information about molecular modeling in which molecule fits into target binding sites and predict structure of intermolecular complex. These molecules were investigated by protein ligand binding score, protein ligand interaction and ADME studies. All the target molecules were analyzed against Staphylococcus aureus which is a gram positive bacterium found on skin and upper respiratory tract. The protein molecule selected for the analysis was PDB code 4LAE protein ligand. Basically it is an oxidoreductase inhibitor and its structure is based on 7(benzimidazole-1-yl)-2, 4-diaminoquinazolines. Out of all twenty nine compounds five compounds (5B,5G,5H,5N and 5Q) were estimated as most potent molecules as antibacterial agent.

Keywords: Molecular Docking, ADME, Anti microbial

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RADIOTRACER TECHNIQUES

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ABSTRACT

Radio Tracer Techniques can be defined as technique which utilizes a labelled compound to trace the different intermediates and various steps in biosynthetic pathways in plants. The labelled compound can be prepared by use of two types of isotopes. Radioactive isotopes and Stable isotope are used to labelled the compound. Radioactive isotopes as ^{3}H, ^{14}C, ^{32}S, ^{31}P, ^{15}N etc. still continue to play a key role in the understanding of the metabolic aspects of plants. Plant produces metabolites through various vital biosynthetic processes for example Glycolysis and Krebs cycle helpful in production of secondary metabolites, Shikimic acid pathway for cynogenetic glycoside, alkaloid and aromatic amino acid. Pentose phosphate pathway for sugar. Some Techniques Used for Investigation of Biosynthetic Pathways are Tracer techniques, Use of Isolated organs or Tissues Grafting method, Use of mutant strains, enzymatic studies. Future aspects it is found that Pb^{2+}over-accumulates in mutant plants. Using radioactive ^{205}Pb to further explore the distribution and uptake dynamics of Pb ions in the mutant, The $^{11}CO_2$ radiotracer, us the opportunity to explore the dynamics of carbon flux in plants, as well as diurnal effects on carbon flux it also gives a full picture of the fluctuation of carbon metabolism in the starch mutants It is found that the Fe status in plants affects the carbon fixation ability in plant leaves, and also alters carbon partitioning (e.g., organic acid production), allocation and root exudation in plants.

Keywords: Radiotracer techniques, Radioactive isotopes.

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ROLE OF NUCLEAR MEDICINE IN THE DIAGNOSIS OF DEMENTIA

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ABSTRACT

Dementia describes the loss of brain function that occurs with certain diseases, and which has the potential to affect memory, thinking, language, behavior and judgment.Dementia originated from two Latin words, which mean away and mind Irreversible neurodegeneration is the reason associated with most types of dementia .Timely and accurate clinical evaluation of dementia is critical because treatment is effective when started before irreversible progression of disease. The focus of this article is the role of molecular imaging modalities, such as perfusion single photon emission computed tomography (SPECT) and positron emission tomography (PET), in the treatment of dementia. Perfusion SPECT is a molecular imaging technique in which photons emitted from an injected radioactive tracer (ie, radiotracer) are imaged by rotating camera heads, similar to the technique of CT scan, except that the radiation source is internal to the patient. Brain perfusion SPECT (ie, perfusion SPECT) involves specific radiotracers that depict regional cerebral blood flow (rCBF). Based on the principle that rCBF and metabolism are coupled, perfusion SPECT images can be interpreted to reflect regional neuronal activity. Use of a potential biomarker will help in diagnosing the disease more appropriately. Thus, nuclear imaging techniques provide the opportunity to objectively evaluate a patient's disease at an early stage and assist with difficult differential diagnosis to prevent further criticality of the disease.

Keywords: Nuclear Medicine, Dementia, Alzheimer.

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NUCLEAR CARDIOLOGY: SPECT AND PET TECHNIQUES AND CHALLENGES TO NUCLEAR CARDIOLOGY

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ABSTRACT

Nuclear cardiology isan important branch of nuclear medicine, which uses non-invasive techniques to assess myocardial blood flow, evaluate the pumping function of the heartaswellas visualizethesizeandlocationofheartattack. Nuclear cardiology has played a pivotal role in establishing the diagnosis of heart disease extent and the prediction of outcomes in the setting of coronary artery disease. Techniques involved are Myocardial Perfusion Imaging, SinglePhotonEmissionComputedTomographyandPositron Emission Tomography. Among which MPI is most widely used. Myocardial Single Photon Emission Computed Tomography (SPECT) with thallium-201 or technetium-99m labeled tracers offer valuable data regarding ventricular function,myocardialperfusion,viabilityandintra-ventricular synchronism whereas, Positron Emission Tomography gives accurate evaluation of these and provide high image quality and has ability of quantitative analysis. Tracer technique will continuetobe inuse.Howeverradiationexposureofpatients remains serious challenge. Cost, product availability, reimbursement and patient referral patterns will be important factorsdefiningthefutureuseofPET.Thecurrentchallenges of nuclear cardiology will become opportunities if more collaborative efforts are devoted to this exciting field of nuclearmedicine.

Keywords: Nuclear Cardiology, SPECT, PET, Myocardial Perfusion Imaging.

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RADIOPHARMACEUTICALS IN NUCLEAR MEDICINE: RECENT DEVELOPMENTS FOR PET STUDIES

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ABSTRACT

Positron emission tomography (PET) and single-photon emission computed tomography (SPECT) are in vivo molecular imaging devices which are largely used in nuclear medicine for diagnosis and treatment of many severe diseases. The PET imaging technique was developed in the 1970s primarily for brain imaging research. They use biomolecules as probes, which are labeled with radionuclides of short half-lives, synthesized prior to the imaging studies. These probes are called radiopharmaceuticals.Recently much development has been done in the instrumentation of PET for the better imaging of the disease compared to the traditional instrument.Positron Emission Tomography/Computed Tomography (PET/CT)is recently developed imaging technique used widely in oncology imaging.Also PET/CT, with a suitable biomarker isfound to be more specific than Magnetic Resonance Imaging (MRI) in detecting clinically significant high-grade prostate cancer lesions. Simultaneous PET/magnetic resonance (MR) hybrid systems have been developed. Solid state detectors with avalanche photodiodes or digital silicon photomultipliers have also been utilized in PET. These new detectors allow improved image resolution, higher spatial resolution, localization of information, higher count rate, as well as a reduced sensitivity to electromagnetic MR fields.These radical improvements and modifications in PETdesigns can ultimately be translated into high image quality, early and increased diagnostic confidence, improved treatment planning and faster workflows.

Keywords: Radiopharmaceuticals, Nuclear Medicine, PET.

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RECENT ADVANCEMENT OF NUCLEAR MEDICINE IN HEALTH CARE

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ABSTRACT

The different types of technologies and procedures that comprise nuclear medicine are now a routine and vital part of diagnosing cancers, cardiovascular disease and certain neurological disorders, as well as treating some cancers. There are a number of exciting emerging opportunities in nuclear medicine, including the ability to understand addictions and depression, to better assess the effectiveness of drugs, and to individualize cancer therapies. However, to understand these promises will require continued federal support for nuclear medicine research and parallel efforts to handle such problems because the shortage of clinical and research personnel, an inadequate supply of radionuclide for research, and cumbersome regulatory requirements.

Keywords: Cancer; Neurological Disorders; Depression; Radionuclide; Nuclear Medicine.

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MODERN BIOLOGICAL THEORIES OF AGING

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ABSTRACT

Aging is the development of symptoms of physical, psychological and social growth to become older and an increase in the probability of death. Aging and age related diseases affect the healthy aging. Human's mortality is not from 'healthy' aging but from age-related diseases. Healthy aging is associated with longevity. In the modern era mysteries of healthy aging and longevity are not yet to be clear within the advancement of molecular biology and genetics. There are many theories have been proposed in an attempt to explain the process of aging which fall into two main categories. The first category includes the concepts of aging is programmed and research told that aging is caused by the accumulation of damage and another category of aging theories proposed different sources and targets of the damage i.e. programmed and non programmed. Both theories neither to explain and nor to found satisfactory. These theories may interact with each other in a complex way. All the aging theories must meet three basic principles:

1. The theory explained aging changes must occurs in humans
2. It must be progressive with time
3. The process must manifest as age-related diseases, causes organ damage and loss of functions.

The main objective of this abstract is to understand the concept of the modern available theories and relation to longevity.

Keywords: Aging, Theory, Longevity, age related diseases.

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SPECT VS PET: COMPARISON, ADVANTAGES AND LIMITATIONS

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ABSTRACT

Nuclear medicine involves the application of radioactive substance in the diagnosis and treatment of disease. Its emphasis is on imaging anatomy and physiology of the organ. Single Photon Emission computed tomography (SPECT) and Positron Emission Tomography (PET) scans are generally used imaging modalities in nuclear medicine. SPECT and PET are similar in the use of a radioactive tracer material and detection of γ-rays.

Unlike PET, in which tracer used emit positrons which innhilitate with electrons upto a few millimeters away, causing two γ-photons to be emitted in opposite directions, the tracer used in SPECT emit γ-radiations which can be measured directly.

PET scan is more advantageous over SPECT, as the former gives more accurate and precise data about the status of organ. However instead of these advantages, SPECT is more widely used as it is widely available because the radioisotope used is longer lasting and far less expensive than SPECT and the gamma scanning equipment is less expensive as well.

The radionuclide used has short half-life leading to expensiveness of PET technique. In spite of having many advantages, PET limits its use in diagnosis of cancer.

Keywords: Nuclear medicine, SPECT and PET, Radiotracers.

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RADIOPHARMACEUTICAL AGENT- TECHNETIUM 99M

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ABSTRACT

Radiopharmaceuticals have been defined as radioactive drugs that, when used for the purpose of diagnosis or therapy, typically elicit no physiological response from the patient. Technetium 99m (99mTc) is the isotope of choice for routine labeling of kits for diagnostic work. It has a gamma photon emission that is compatible with the requirements of a gamma camera, and no beta emission, so radiation exposure for the patient is minimized. The half-life of 99mTc is 6.02 hours (ie, the time required for the isotope to decay to one half of its original radioactivity). However, its biological half-life is shorter because it undergoes rapid renal clearance. This is advantageous because any radiopharmaceutical that has not been absorbed by the target organ is cleared from the body and this result in high-quality images. The dose of 99mTc that is administered depends on the radiopharmaceutical kit being used, the organ being imaged and the test performed. Doses are set out in the Administration of Radioactive Substances Advisory Committee's "Notes for guidance on the clinical administration of radiopharmaceuticals and use of sealed radioactive sources".

Keywords: Radiopharmaceuticals, diagnosis, isotope, Technetium 99m.

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ROLE OF RADIO LABELLED MOLECULES IN MOLECULAR ANALYSIS OF GENE TO DIAGNOSE PREVALENCE OF VARIOUS MICROBIAL DISEASES

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ABSTRACT

The cases of occurrence of many microbial diseases is now been increasing at tremendous rate. In most of the conditions diagnosis of the disease is a major hurdle. Most of the research at molecular level is performed to get the complete profile of the causative agent. The most accurate strategy for its identification is the detection of marker gene or protein. In the recent advances, radio labelled probes is playing an important role for getting the accurate molecular proof of the organism involved in causing the pathogenesis. The Radio labelled molecules in the form of end labelled probe helps in the molecular analysis of marker gene of many dreadful diseases. Technologies like southern blotting that uses radio labelled alpha^{32}P for the formation of DNA probe of the marker gene that hybridizes with the gene under investigation available on Nylon membrane after its blotting. The membrane is than washed and dried and finally exposed to X-ray film for around 16 hours to 2-4 days at -20^{0}C. The film is than developed and the signals are analyzed and recorded. The positive signals on the X-ray film confirm the presence of pathogen under investigation. Similarly radio labels are now a days used for the sequence analysis of DNA along with blotting to confirm the genome of causative organism. In one such study of malignant catarrhal fever (MCF) viral DNA, the southern blot on N^{+} membrane was performed using vacu-gene apparatus (Amersham pharmacia). The Blot was hybridized using radio labelled probe. An X-ray film was exposed with the blot for 16 hours at -20^{o}C deep freezer. The positive hybridization signals of DNA confirm the presence of malignant catarrhal fever viral DNA in test sample.

Keywords: Radio labelled probe ^{33}P, Hybridization, end labelled, southern blotting, disease diagnosis.

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A PHARMACOVIGILANCE STUDY OF SOME DRUGS FOR THE TREATMENT OF ASTHMA

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ABSTRACT

Asthma is a chronic inflammatory disorder of the air ways in which many cells and cellular elements play a role, in particular, mast cells, eosinophils, T lymphocytes, macrophages, neutrophils, and epithelial cells. Spasm (narrowing of the bronchial tubes) is caused by the inflammation of the muscles surrounding the air passageways.Pharmacovigilance need to be an integral accompaniment to treatment programs. This increase the likelihood of adverse drug reaction, some of which are severe. Most patient on treatment for drug-resistant asthma experience at least one side effect and two third of such patient have had at least one medicine stopped temporarily or permanently as a result of adverse drug reaction. The morbidity and mortality caused by asthma is partly due to serious adverse reaction induced by anti-asthmatic drugs. These ADRs damage public confidence and affect patient adherence. The present work is the open ended base line information about the prevalence of adverse drug reaction of Antiasthmatic drug and their distribution amongst age group, gender, social habits and organ system affected. In our study we followed prospective observational cohort study. Cohort studies are useful when there is a need to know the incidence rates of adverse events in addition to the relative risk of adverse event. Selected anti asthmatic drug such as Budesonide, Montelukast, Zafirlukast, Salbutamol, Salmeterol, Terbutaline, Theophylline, and Hydrocortisone had been evaluated for ADRs. The most common adverse drug reaction found in present study is Headache along with Redness of eye, Fever, Abdominal cramp and vomiting in enrolled patient's occurred during the first 2-3 weeks of treatment.Statistically the data was analysed with the help of Naranjo and Hertwig scale for analysing adverse drug reaction probability.

Keywords: Asthma, Pharmacovigilance, Anti asthmatic agents, Adverse Drug Reaction

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REVIEW ON RECENT ADVANCEMENT IN CARDIAC NUCLEAR IMAGING TECHNOLOGY

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ABSTRACT

This past year there has been a number of new advances in the field of nuclear imaging, including new or enhanced technologies and various clinical trials demonstrating the efficacy of nuclear imaging modalities. Many of the new advancements have been seen in cardiology and oncology.Myocardial perfusion imaging (MPI) has long been a gold-standard procedure when diagnosing heart disease. Changing priorities in recent years, including radiation dose concerns, reimbursement and radiotracer supply issues, have helped push the subspecialty forward with new technologies for both PET and SPECT. Nuclear myocardial perfusion imaging (MPI) involves the use of radiotracers to generate scintigraphic images of the myocardium. It is the best validated and most standardized of all cardiac imaging modalities, demonstrating regional perfusion ventricular wall motion and accurately calculating reproducible left ventricular ejection fraction. Physiological or pharmacological stress can be used to uncover myocardial ischaemia.

Keywords: Myocardial perfusion imaging, Scintigraphic, PET and SPECT.

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REVIEW ON NEW GENE THERAPY

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ABSTRACT

The purpose of this review is to describe the most notable advancements in preclinical and clinical research on gene therapy and to discuss prospects for future development based on a new generation of vectors and delivery. Gene therapy is use for treating a large numbers of CNS disorders by providing a durable therapeutic protein via a single administration. Adeno-associated virus (AAV)-mediated gene transfer is of particular interest as a therapeutic tool because of its safety profile and efficiency in transducing a wide range of cell types.

The tremendous amount of preclinical data demonstrating the feasibility and promise of gene therapy to treat disorders of the central nervous system (CNS) are driving new advances for the treatment of both genetic and acquired neurodegenerative diseases. The diseases targeted with gene therapy are gene therapy include lysosomal storage diseases, Alzheimer disease, Parkinson's disease, amyotrophic lateral sclerosis (ALS), and spinal muscular atrophy (SMA).

UNSW researchers have explain gene therapy for a rare genetic disorder called Canavan disease, and say it could be adapted to treat other inherited disorders affecting the brain. A group of researchers led by UNSW Sydney has developed a new gene therapy that may reverse the devastating symptoms of brain disorders such as Canavan disease. Canavan disease is a rare, fatalgenetic disorderin which an enzyme called aspartoacylase is not active. This enzyme breaks down the amino acid NAA in the body. The research team treated mice with symptoms of Canavan disease with the new gene therapy. When they took a magnetic resonance scan of the brains and tested their motor and behavioral skills, they found that the therapy reversed the disease symptoms.

Keywords: Gene therapy, Canavan

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NANOCRYSTALS AND THEIR IMPORTANCE IN THE PROMISING ARENA OF PHARMACEUTICAL NANOTECHNOLOGY

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ABSTRACT

Pharmaceutical nanocrystals are drug crystals with a size in the nanometer range or in other words, nanoparticles with a crystalline character.Nanocrystals are fundamentally carrier-free colloidal delivery systems in nano range which is an exciting advancement as far as poorly soluble drugs are concerned.Drug nanocrystals are nanoscopic crystals of mother compounds with the aspect of less than 1 μm. These comprise of 100% drug and are devoid of carriers and usually stabilized with surfactants or polymeric stearic stabilizers.The high drug loading of nanocrystals is also one aspect that makes nanocrystals to be very competent in carrying drug to or into cells, reaching a satisfactorily high therapeutic concentration for pharmacological outcome.Pharmaceutically, nanocrystals can be applied to all poorly soluble drugs to triumph over their solubility and bioavailability problems. The shrink in particle size to nanometer range contributes to the increased particle surface, curvature, saturation solubility, dissolution velocity and extra adequate bioavailability. Currently, drug nanocrystals are gaining more considerations as a promising approach due to numerous reasons such as a mounting number of poorly soluble drugs in formulation development process, economical, easier fabrication, safer formulation and faster commencement of actions. In addition to pharmaceuticals, neutraceuticals and cosmetic industries are also taking benefit of the nanocrystal technology.

Keywords: Nanocrystals, Nanometer, crystalline, solubility, bioavailability

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SOLUBILITY ENHANCEMENT OF POORLY WATER SOLUBLE DRUG NIMESULIDE BY USING MIXED SOLVENCY

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ABSTRACT

As per the exhaustive literature survey solubility is the play a important role of pharmaceutical preparation so that's why we are selected low to enhance the solubility of purely water soluble drugs without using organic solvents. So the present research work attempted mixed solvency approach for solubility enhancement of poorly water soluble drug Nimesulide various hydrotropic agents including Urea 12%,sodium acetate 16%, sodium acetate 12%,were evaluated undar study for enhancing solubility of drug. We prepared various blends of these hydrotropic agents on solubility nimesulide was studied. 0.0361, 0.456, 0.542, 0.612, 0.738. It was found that mixed solvency approach is useful in solubility enhancement nimesulide or poorly water soluble drug.By this Study we can conclude that, Solubility is the most important characteristic of a drug for its oral bioavailability, formulation, development of different dosage form of different drugs and for quantitative analysis. Proposed methodology of values and may be proved the best method in future.

Keywords: Nimesulide, Urea, Sodium acetate, mixed solvency concept.

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FORMULATION AND EVALUATION OF OCIMUM SANCTUM LEAVES CAPSULES FOR THE TREATMENT OF ANTIANXIETY

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ABSTRACT

Anxietyis a psychological and physiological state characterized by somatic, emotional, cognitive, and behavior components. Ocimumsanctum Linn. FamilyLabiatae, commonlyknown as 'Sacred Basil' or 'Holy Basil' (Tulsi in Hindi) is a herbaceousannual plant indigenous to India, has been used for thousands of years in Ayurveda for its diverse healing properties. The present studywasformulateocimumsanctumleaves capsules with the help of collection of tulsileavesthendried at room temperature and extraction processisdone by ethanolicextract. After the formulation of capsule evaluationwasdone by organolepticcharacteristics, weight variation, drug content uniformity, disintegration, dissolution test. Researchmethodologyshowedthatocimumsanctumleaves capsule wassuccessfullyprepared.

Keywords: Ocimumsanctumleaves, Ethanol, Water, Soxhletapparatus.

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AN UPDATE ON LIPOSOMAL VACCINE DELIVERY

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ABSTRACT

From the past decade liposomes have much attention as nanocarrier mediated drug delivery for various therapeutic or diagnosis purpose (Myocet®, Doxil®, Caelyx®, LipoDox®, Thermodox®, Ambisome®). Present scenario of vaccine development in the research and market interest has been substantially increased (Epaxal®, Inflexal®). Vaccine research are mainly focus on subunite vaccine due to their better defined structure, easy production and significantly safety margin, however because of their synthetic nature, weak immune response there is a need for counterbalance the these problems. The key advantage of liposomes as vaccine delivery systems includes their versatility and plasticity. The Liposomal composition and preparation could be optimized to achieve desired quality such as charge, size, size distribution, entrapment and location of antigens or adjuvant by critical optimization of different variables such as lipid composition or lipid ratio, sonication, pH, temperature, method of preparation etc. Subsequently easy to tailored regarding its applicability like targeted, stealth, pH sensitive and many more. In this chapter the authors would be described all the formulations and delivery aspects as well as meet up problems with respect to liposomal vaccine delivery.

Keywords: Liposome; Vaccine; Adjuvant; Immunization.

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A COMPARATIVE REVIEW ON ETHOSOMES AND LIPOSOMES

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ABSTRACT

Ethosomes are phospholipid nanovesicles used for dermal as well as transdermal delivery of molecules. Liposomes are spherical vesicle having at least single lipid bilayer.The liposome can be used as a vehicle for management of nutrients and pharmaceutical drugs. Ethosomes are composed mainly of phospholipids and higher concentration of ethanol and water (disturbance of skin lipid bilayers and ability to penetrate the stratum corneum), high patient compliance due to semisolid form (gel or cream) somewhat than Iontophoresis as well as Phonophoresis. Ethosomes are used for transdermal drug delivery which can present superior skin permeation and stability than liposomes. Ethosomes improves entrapment of drug and overall stability. Ethosomes in comparison to liposomes have permeation enhancer like ethanol and propylene glycol and require no solubilizer. Ethosomes have higher entrapment efficiency than liposomes. Ethosomes prepared by cold and hot method. In Cold method – phospholipid, ethanol, glycol and drug vigorously stirred and heated upto 30°C. Pre-heated water added to above mixture and then stirred. Desired vesicle size obtained and finally refrigerated. In Hot Method – phospholipid, water and drug dispersed at 40°C to form a colloidal solution. Ethanol and glycol mixed separately at 40°C then organic phase added to aqueous phase. Ethosomes are characterized by size and shape, zeta potential, entrapment efficiency, drug content, stability studies, in vitro dissolution and skin permeation. Limitation of ethosomes include – poor yield, in case shell locking is ineffective then the ethosomes may coalescence and fall apart on transfer into water, loss of product during transfer from organic to water media. Therapeutic application of ethosomes with drug includes treatment of herpetic infection (Acyclovir), AIDS (Zidovudine), Parkinsonian Syndrome (Trihexpenidylhel), diabetes (Insulin), Male Hypogonodism (Testosterone), Inflammatory Sin disease (Cyclosporine) etc.

Keywords: Ethosomes, Liposomes, Stability, Transdermal, vesicle

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FORMULATION BY DESIGN (FBD): A REVOLUTIONARY APPROACH FOR DEVELOPMENT OF "OPTIMIZED" DRUG DELIVERY SYSTEM

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ABSTRACT

Development of an optimum drug delivery system (DDS), invariably involves rational blending of a plethora of diverse functional and non-functional polymers and excipients. This traditional approach is a terribly tedious job for a formulation scientist because it includes it includes number of objectives. Optimizing drug products and pharmaceutical process using Design of experiments (DoE), on the other hand, has been reported to successfully embarked upon all the potential factors systematically, simultaneously and speedily. Recently, a holistic DoE-based philosophy of Quality by Design (QbD) has been permeating into the mindset and practice in the industrial environs. "Formulation by Design (FbD)", applicable specifically to the use of DoE in drug formulation development has recently. The FbD approach has been found to be highly rewarding to yield "the best possible" formulation revealing the plausible terms of time, developmental effort, expertise and of course money. Plus, it has a highly specific merit of amenability to scale-up of drug delivery system and post approval changes. Owing to such numerous benefits inherent FbD approach, it has lately witnessed a spurt in the systematic development of various DDS, both oral and non-oral. FbD uses five key strengths viz. apt choice of experimental designs, accurate computer-aided optimization, meticulous drug product development, precise definition of design and control space, and identification of critical quality attributes (CQAs), critical formulation attributes (CFAs) and critical process parameters (CPPs). Considered as a QbD off-shoot, Formulation by Design (FbD) is a newer paradigm, mainly applicable to the development of optimum drug formulations.

Keywords: Formulation by Design (FbD), Quality by Design (QbD), Design of experiment

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SOLUBILITY ENHANCEMENT OF LEFLUNOMIDE USING MIXED HYDROTROPY APPROACH

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ABSTRACT

In preparation of formulation, the solubility issue remains a key concern. Now a day, many drugs especially in BCS class II are observed to have less aqueous solubility. Among all solubility enhancing techniques practiced in pharmaceutical field, mixed hydrotropy have proved to be one of the suitable, ecofriendly and cost effective approach for improving the solubility and ultimately bioavailability of poorly water soluble drugs. Hydrotropy play a vital role in enhancing the dissolution of hydrophobic drugs. Poor aqueous solubility ends up in necessary products not reaching the finished pharmaceuticals because of not achieving their full potential and therapeutic vary. Aqueous solubility of drug additionally affects physical, chemical properties of the drug, dose, stability in canal track, severs as customary for take a look at purity, the speed of dissolution of solid, rate and extent of absorption, win desired concentration of drug in circulation for desired (anticipated) pharmacological response thus purpose of research was to enhance the aqueous solubility of poorly water soluble drug leflunomide, which further applicable for formulation development and analysis. In this study solubility of leflunomide was determined by excess solute method individually and in different blends of hydrotropic agents namely urea, sodium acetate and sodium citrate at varying concentration, using purified water as solvent. Lefunomide was analyzed by spectrophotometric analysis using double beam UV visible spectrophotometer (Shimadzu® 1700), measuring the absorbances of appropriately diluted solutions against respective reagent blanks at 260 nm wavelength. More than 1% solubility and more than 750 times were obtained in hydrotropic blend containing maximum concentration 50% (30% urea, 10% sodium acetate, 10% sodium citrate).

Keywords: Aqueous Solubility, Solubility enhancement, Mixed Hydrotropy,Leflunomide

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FORMULATION AND DEVELOPMENT OF NOVEL CARRIER SYSTEMS CONTAINING HERBAL PLANT EXTRACTS FOR TREATMENT OF DIABETES MELLITUS

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ABSTRACT

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

Keywords: Polymeric Microparticles, Diabetes Mellitus, Hovenia dulcis.

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NANOROBOTICS

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ABSTRACT

Nanorobotics is the technology of creating machines or robots at or close to the microscopic scale of a nanometer. More specifically, nanorobotics refers to the still largely hypothetical nanotechnology engineering discipline of designing and building nanorobots, devices ranging in size from 0.1-10 micrometers and constructed of nanoscale or molecular components. As no artificial non-biological nanorobots have yet been created, they remain a hypothetical concept. The names nanobots, nanoids, nanites or nanomites have also been used to describe these hypothetical devices. Nanotechnology is the creation of fully mechanical machine with its physical or its components size very close to the nanometre range. This kind is commonly known as nanorobotics. The major development of nanomedicine molecular nanotechnology (MNT) or nanorobotics. Potential applications for nanorobotics in medicine include early diagnosis and targeted drug delivery for cancer biomedical instrumentation, surgery, pharmacokinetics, monitoring of diabetes, and health care. Nanomedicine's that can easily traverse the human body because nanorobots are so tiny. The science of Nanorobotics vital role in the development of the robots, whose structure is built by using nanoscale components and its contents with in the basses of objectives and limitations. The nature of the component being in the nano scale allows the researchers for the engineering of the mimic of human beings. Cancer can be successfully treated with current stages of medical technologies and therapy tools with the help of the nanorobotics.

Keywords: Nanotechnology; nanorobotics; nanomedicine; nanometer

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MEDICATED CHEWING GUM & LOZENGES: A NOVEL DRUG DELIVERY SYSTEM

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ABSTRACT

Medicated chewing gum could be a great way to delivery of the drug to the body either for local or systemic effects. Medicated chewing gum is solid, single dose preparation that has to be chewed and not swallowed; it contains one or more active ingredient that is released by chewing. During chewing process the drug contained in the gum product is release from mass into saliva and absorbed through the oral mucosa. Medicated chewing gum shows highly convenient patient-compliant way of dosing medications, not only for special population groups with swallowing difficulties such as children and the elderly, but also for the general population, including the young generation. Several agents are integrated in medicated chewing gum such as Fluoride for dental caries, aspirin as an analgesic, nicotine for smoking, and caffeine as a stay alert preparation and vitamin supplementation are currently available. Today enhance technology and expanded know how have made it possible to develop and manufacture medicated chewing gum with predefined properties.

Keywords: Medicated Chewing gum, Oral drug delivery system, Patient compliance

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A REVIEW ON LOCAL ANEASTHETIC MUCOADHESIVE TABLETS

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ABSTRACT

Today, drug delivery systems designed with the aim to improve patient compliance and convenience is more important than ever. Therefore huge work is going on to develop novel dosage forms to satisfy increased patient demands of more convenient dosage forms. Oral mucosal delivery offers a convenient way of dosing medication, not only to special populations with swallowing difficulties, but also to the general population. Mucoadhesive dosage forms provide prolonged contact time at the site of attachment, having high patient compliance and are economic as compare to other dosage forms. The use of mucoadhesive polymers has made this delivery system of controlled release application.

Local anesthesia remains the foundation of pain control in dentistry Local anesthetics remain the safest and most effective drugs in medicine and dentistry to relieve intraoperative and postoperative pain. The amide local anesthetic agents currently available in dentistry are extremely safe and effective. The availability of various formulations of lidocaine, mepivacaine, prilocaine, articaine, and bupivacaine permits a practitioner to select agents that can meet treatment requirements. The safety and efficacy of current systems can be improved if their delivery rate, biodegradation, and site-specific targeting can be predicted, monitored, and controlled.

Keywords: Mucoadhesive tablets, Local anaesthetics, Controlled drug release, Polymers, etc.

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FORMULATION AND EVALUATION OF HERBAL CREAM CONTAINING ETHANOLIC EXTRACT OF GINGER (ZINGIBER OFFICINALE)

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ABSTRACT

Herbal preparations are used to improve the human emergence. The aim of this research was to formulate and evaluate the herbal cream containing extract of ginger powder for the purpose of moistening and nourishing the skin. Zingiber officinale is one of the most popular fortunate and which are more extensively studied for its pharmaceutical and clinical properties. The extract of dried zinger powder was obtained by using ethanol as a solvent and evaluated of various parameters like pH, homogeneity, irritancy, viscosity, spreadability etc. From the present study it can be concluded that it is possible to develop cream containing herbal extract having antimicrobial property and can be used as the provision of a barrier to protect skin.

Keywords: Herbal Cosmetic, Herbal Cream, Natural Ingredients, Formulation, Evaluation.

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COSMETOVIGILANCE OF COMMONLY USED COSMETIC PREPARATIONS

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ABSTRACT

Cosmetics and toiletries are very popular and their use continues to increase because consumers consider physical appearance important. However, in spite of their safety and tolerability, we have become aware that adverse effects can occur. Such adverse effects are underestimated as a result of self-diagnosis and self-medication, which are common behaviors in the presence of mild-to-moderate reactions. Moreover, such effects are underestimated because of the absence of formal and reliable monitoring systems. Cosmetovigilance is the on-going and systematic monitoring of the safety of cosmetics in terms of human health to detect adverse effect of cosmetic products& to prevent adverse effect by taking appropriate measures, for regulations for cosmetic products primarily address the safety of products that may be used by large population of healthy consumers and the identification & analysis of adverse effects related to cosmetic products which is to a large extent, industry driven.In the present study data has been collected from the ingredients list of many common cosmetic products for vigilance and their reported side effects.Parabens, talc and p-phenylenediamineare used in makeup, moisturizers, shampoos, hair dyesand are associated with breast cancer, ovarian cancer and tumours in lungs. The usage of these toxic ingredients requires the creation of a standard reporting form, as well as resolution concerning professional categories authorized to report and the subsequent validation/evaluation of the collected forms.

Keywords: Cosmetics, Cosmetovigilance, Adverse Effects, Parabens, Talc.

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SOLUBILITY ENHANCEMENT OF LEFLUNOMIDE BY GEL ENTRAPMENT TECHNIQUE

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ABSTRACT

The current study is basically based on to enhance the solubility of leflunomide, water insoluble drug. In this study, the gel entrapment technique was used to enhance the solubility of Leflunomide. Leflunomide comes under (Biopharmaceutical Classification System) BCS Class II having low solubility and high permeability. To improve the solubility of leflunomide different solubility techniques are used i.e nanosuspension, particle size reduction, cryogenic techniques, melt agglomeration method and electro-spinning method etc. The reported solubility of leflunomide was 25µg/ml. In gel entrapment technique; solubility of leflunomide was improved using different polymers and their combination like Hydroxy Propyl Methyl Cellulose (HPMC) and Ethyl Cellulose etc. The solubility of leflunomide was increased by 5.23 times in HPMC with chloroform, 3.82 times in HPMC with ethanol and dichloromethane, 3.05 times in HPMC with ethanol and 2.63 times in combination of HPMC and EC with dichloromethane.

Keywords: Leflunomide, Nanosuspension

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INNOVATIVE RADIOPHARMACEUTICALS IN ONCOLOGY – A REVIEW

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ABSTRACT

Radiopharmaceuticals play a critical role not only in modern medicine primarily for diagnostic purposes, but also for monitoring disease progression and response to treatment. The radioactive agents used in the nuclear medical field are called radiopharmaceutical and are required to exhibit high and specific localization of radioactivity into target tissue. Radiolabeled nanocarriers or nanoparticles can bedesigned and used for cancer diagnostic and therapeuticpurposes when tagged with appropriate radionuclides. Current progress in nanotechnology and nanomedicine has exploitedthe possibility of designing tumor-targeted nanocarriers ableto deliver radionuclide payloads in a selective manner toimprove the efficacy and safety of cancer imaging and therapy.

Keywords: Radionuclide, Nanocarriers, Nanoparticles, Nanomedicines

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POLYCYSTIC OVARY SYNDROME (PCOS) & DEIT FOR PCOS – AN UPDATED REVIEW

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ABSTRACT

Polycystic Ovary Syndrome (PCOS) is the most common endocrine disorder affecting women of reproductive age and is associated with obesity, hyperinsulinemia, and insulin resistance, diabetes. PCOS is a leading cause of infertility. In this condition estrogen and progesterone are out of balance. This leads to the growth of ovarian cysts (benign masses on the ovaries). it affects 5-10 % of women .Some common symptoms are : Excessive hair growth on face and body , irregular, heavy or absent menstrual cycle, weight gain and difficulty losing weight, oily skin , mood change , poor sleep. Health risks: Diabetes, heart attack, desperation, cancer. Which can be treated by Low GI diet – which encourage weight loss and Low intensity exercise - yoga and meditation

PCOS is characterized by the menstrual cycle that ranges from >35 days or <8 cycles/year to complete absence of menses (amenorrhea).

PCOS DIET: one should not consume-Sweetened juice, canned fruit in heavy syrup, Starchy vegetables such as potatoes, corn, and peas, Sugary drinks such as soda.

FOOD TO ADD: high-fiber vegetables, such as broccoli, lean protein, such as fish, anti-inflammatory foods and spices, such as turmeric and tomatoes.

Keywords: Polycystic Ovary Syndrome, Hyperinsulinemia,

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TRACKING OF CELL THERAPIES FOR CARDIAC DISEASES WITH NUCLEAR MEDICINE– A REVIEW

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ABSTRACT

As we know heart diseases are amongst the main causes of mortality and morbidity in the world, existing treatments are limited in restoring cardiac lesions. In this scenario, non invasive imaging techniques lead to greater comprehension of cell therapies. Radiopharmaceutical cell labelling, firstly developed to track leukocytes, has been used successfully to evaluate the migration of cell therapies for myocardial diseases. A substantial rise in the amount of reports employing this methodology has taken place in the previous years. We will review the diverse radiopharmaceuticals, imaging modalities, and results of experimental and clinical studies published until now. Also, we report on current limitations and potential advances of radiopharmaceutical labelling for cell therapies in cardiac diseases.

Keywords: Mortality, Morbidity, Myocardial Diseases.

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RADIATION STERILIZATION: AN EFFECTIVE WAY OF MICROBIAL CONTROL

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ABTRACT

Sterilization is process in which all forms of viable microorganisms in pharmaceutical products are killed. It is classified into physical sterilization, chemical sterilization, mechanical sterilization and radiation sterilization. Radiation sterilization is a technique which is widely used for sterilization of several pharmaceutical products as well as for preservation of materials which are liable for attack of microorganisms. It classified into two classes 1. Ionizing radiation 2.Non ionizing radiation. Ionizing radiation can also be divided into three major classes: i] gamma radiation. ii] Electron beam radiation. iii] X-ray radiation. Also non ionizing radiation can be obtained in the form of using UV rays. Advantages of radiation sterilization are: Heat sensitive materials can be easily sterilized by using this method, which is impossible through dry heat method of sterilization. Surgical instruments are sterilized in hospital by this method. Thus radiation sterilization is an important step in the development of various parenteral dosage forms along with surgical instruments.

Keywords: Sterilization, Ionizing radiation, Non ionizingradiation

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OPPORTUNITIES OF NUCLEAR MEDICINE IN HEALTH CARE

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ABSTRACT

Nuclear medicine is a highly multi-disciplinary specialty that develops and uses instrumentation and radiopharmaceuticals to study physiological processes and non-invasively diagnose stage and treat diseases. A radiopharmaceutical is either a radionuclide alone, such as iodine-131 or a radionuclide that is attached to a carrier molecule (a drug, protein, or peptide) or particle, which when introduced into the body by injection, swallowing, or inhalation accumulates in the organ or tissue of interest.

In a nuclear medicine scan, a radiopharmaceutical is administered to the patient, and an imaging instrument that detects radiation is used to show biochemical changes in the body. Nuclear medicine imaging, in contrast to imaging techniques that mainly show anatomy (e.g., conventional, computed tomography [CT], or magnetic resonance imaging [MRI]), can provide important quantitative functional information about normal tissues or disease conditions in living subjects. For treatment, highly targeted radiopharmaceutical may be used to deposit lethal radiation at tumor sites.

Keywords: Nuclear medicine, radiopharmaceuticals, lethal radiation, non - invasively diagnose.

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FLAVANOID EXTRACTION AND HEPATOPROTECTIVE EVALUATION OF LEAVES OF PTEROSPERMUM ACERIFOLIUM

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ABSTRACT

The flavanoid specific extraction of leaves of Pterospermum acerifolium was done with hydroalcoholic solvent followed by treatment of n butanol: water in 1:1 ratio and alkali. The hydrolacoholic and flavanoid extracts were collected dried and their hepatoprotective potential were evaluated in swiss albino mice. The Isoniazide with Rifampicin administration acute liver toxicity model and Silymarine as a standard drug were used in experiment. The experimental evaluation was done to identify the potential of extracts for preventing heptotoxicity induces by isoniazide. All readings were compared with standard and control. It was observed that the extracts of Pterospermum acerifolium signicantly possess the flavanoid specific extraction of leaves of Pterospermum acerifolium was done with hydroalcoholic solvent followed by treatment of n butanol: water in 1:1 ratio and alkali. The hydrolacoholic and flavanoid extracts were collected dried and their hepatoprotective potential were evaluated in swiss albino mice. The Isoniazide with Rifampicin administration acute liver toxicity model and Silymarine as a standard drug are used in experiment. The experimental evaluation was done to identify the potential of extracts for preventing heptotoxicity induces by isoniazide. All readings were compared with standard and control. It was observed that the extracts of Pterospermum acerifolium signicantly possess hepatoprotective activity. The hydro alcoholic extracts have significant contribution in hepatoprotective action.

Keywords: Flavanoid, Silymarine, Hepatoprotective, Isoniazide

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THE ROLE AND APPLICATION OF NANO BASED MEDICINE IN CLINICAL RESEARCH

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ABSTRACT

Nano medicine based drug delivery systems (NMDDS)is one of the best delivery systems which are capable of delivering therapeutics and treating areas of the body that other delivery systems cannot reach. The intravenous NMDDS have significant advantages over other formulation and has significant impact on cancer treatment. The nanoparticle drug delivery and imaging systems are one of the most investigated systems in preclinical and clinical settings. The efficiency and safety of the NMDDS has made it more suitable formulation for active clinical trials. There are number of challenges in biological, technological, and study design of NMDSS that directly or indirectly affects the clinical success of nanoparticle delivery systems. The most common polymer involve in NMDDS is rolein that helps in development of nanoparticluate carriers. The NMDDS improve biodistribution and prolong the half-life of the drug. It also helps to increase intracellular concentration of drugs

Keywords: Nano medicine, Nanoparticle

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COMMUNICATION OF RADIATION RISK IN NUCLEAR MEDICINE

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ABSTARCT

The radiation risk arising from nuclear medicine investigations represents a small but manageable risk to patients and it needs to be effectively communicated to them. Frequently in the culture of "doctor knows best," patients trust their doctors to do whatever is right and appropriate and leave it to them to worry about any attendant risks associated with any tests involving the use of radiation. The benefit to the patient of having a speedier diagnosis and a further guide to management may not be effectively communicated in a comprehensive, timely and professional manner. In this article, we address the issue of communication of radiation risk and benefits to patients and the basis for such information. While there are different ways of communicating radiation risk, we recognize that certain basic parameters are absolutely essential for patients to enable them to make an informed choice about undergoing a nuclear medicine investigation under the direction of a well-trained and qualified individual.

Keywords: Radiation risk, risk benefit analysis, communication of risk

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GREEN SYNTHESIS OF SILVER-NANOPARTICLES OF S.VIRGINIANUM EXTRACT FOR ANTI-OXIDANT AND ANTI-MICROBIAL POTENTIAL

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ABSTRACT

Green synthesis of silver nano-particles (AgNPs) with the help of medicinal plant is an economically viable and ecologically sustainable option in the NPs research. This can enhance large scale manufacture and high antioxidant potential and antimicrobial (antibacterial and antifungal) activity of NPs. Therefore several researchers are focused on the synthesis of NPs using medicinal plants for the better pharmaceutical utilizations. However, still this kind of study has been need because numbers of medicinal plants are not yet properly studied with focus of NPs synthesis. Hence the present investigation was undertaken to study the green synthesis of NPs using medicinal plants for their antioxidant antimicrobial activity. Solanum virginianum L, (wild eggplant or nightshade plant), is a prickly herb, belongs to family Solanaceae. It has spines throughout the plant. Various phytoconstituents have been found, the major constituents is alkaloid. It has vital role in various traditional as well as medicinal uses for curing internal and external physiological disorders. This plant has also used for phytoremediation as it possess the ability to degrade carbofuran residues in rice field soil and therefore the plant species may further be investigated for its phytoremidial role. In the present study, AgNPs of plant Solanum virginianum was synthesized and characterized by UV-Vis spectrophotometry, FT-IR and SEM analysis. In-vitro anti-oxidant and anti-microbial investigations showed the impressive results. However the present investigation adverts that the AgNPs can be used to prepare and develop nano-drug, new generation of antimicrobials, drug delivery systems, biosensors and different other applications such as Ag based dressing, Ag-coated medicinal devices.

Keywords: Silver nano-particles, Solanum virginianum, Anti-microbials, Anti-oxidants

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RADIOACTIVE IODINE IN HEALTHCARE SYSTEM

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ABSTRACT

The use of radiopharmaceuticals for molecular imaging of biochemical and physiological processes in-vivo has evolved into an important diagnostic tool in modern nuclear medicine and medical research. Radioiodine therapy is a nuclear medicine treatment for an overactive thyroid, a condition called hyperthyroidism, and also may be used to treat thyroid cancer. When a small dose of radioactive iodine 131I (an isotope of iodine that emits radiation) is swallowed, it is absorbed into the bloodstream and concentrated by the thyroid gland, where it begins destroying the gland's cells. Thyroid cancer is the most common endocrine malignancy, and its theranostic radioiodine has been widely used to diagnose or treat differentiated thyroid cancer (DTC). Radioiodine, the first theragnostic agent, was used on DTC and metastases. Radionuclide scintigraphy and therapy with 123I/131I are used in the treatment and follow-up of patients with DTC. The radioactive iodine (131I) circulates throughout your body in your bloodstream. Thyroid cancer cells pick up the iodine wherever they are in your body. The radiation in the iodine then kills the cancer cells. This treatment can be used to ablate (destroy) any thyroid tissue not removed by surgery or to treat some types of thyroid cancer that have spread to lymph nodes and other parts of the body. In the present review author collected the various data related to radioactive iodine.

Keywords: Molecular imaging, Radioiodine, Radioactive medicine

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PROTECTIVE POTENTIAL OF POLYHERBAL FORMULATION AGAINST CISPLATIN INDUCED TOXICITY

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ABSTRACT

Cisplatin is a potent anticancer agent and its use is associated with several toxic effects. There are various reports that antioxidants reduce severity of tissue damage without compromising the therapeutic effects of cisplatin. Cisplatin induced hepatotoxicity and nephrotoxicity was inhibited by polyherbal formulation of three plants, namely F. religiosa, A. marmelos and B. monosperma, which are reported to possess antioxidant activity. The extracts were mixed together in different proportions in four formulations and these formulations were evaluated for stability. The formulations were chemically and physically stable and there was no contamination with any of the microorganisms. The extracts and formulations were subjected to the acute oral toxicity using OECD 423 guideline. All the extracts and formulations were safe; this assessment is based on the no toxic effect up to 2000mg/kg. Results showed that the increased oxidative damage during aging may be due to decline of enzymes regulating oxidative stress, viz. superoxide dismutase, catalase and glutathione peroxidase in vital organs. Formulations reversed effect of cisplatin on LPO, SOD, GSH, and Catalase enzyme. Cisplatin disrupted kidney function test and liver function tests in rats which was attenuated by all the threeplant extracts as well as formulations indicated by reduced BUN, uric acid and creatinine levels. Similarly plant extracts and formulations exhibited antioxidant, hepatoprotective and nephroprotective activity.

Keywords: *F. religiosa, A. marmelos, B. monosperma*, Polyherbal Formulations, Antioxidant, Hepatoprotective, Nephroprotective

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MOLECULAR DOCKING STUDIES OF STEREOISOMERS OF PINORESINOL ON HUMAN PANCREATIC ALPHA AMYLASE

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ABSTRACT

Molecular docking approach was used to identify the antidiabetic potential of Pinoresinols and its stereoisomer, an furfuran type of lignans found in food, vegetables and herbal natural resources. The Pancreatic alpha-amylase enzymes (PDB ID 1B2Y) was identified and downloaded from the protein data bank. The protein cavity was generated and the cavity with volume 153.088 was selected. The isomers and acarbose (standard) were energy minimized and docked using molegro virtual docker

From the docking studies the interaction between the ligand and protein in the terms interaction energy, binding energy, hydrophobic interaction, hydrogen bond energy, steric energy and electrostatic energy were calculated. The docking results indicated that steriochemically pinoresinol (-128.45) showed highest interaction energy then its (-120.39) levo form. Both the isomers were active toward enzyme and showed significant enzyme binding.

Keywords: Pinoresinols, molegro

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SPECT AND PET AS A REVOLUTIONARY SCANNING TECHNIQUE.

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ABSTRACT

In recent era, digital imaging technique or scanning play vital role in the detection of manyhuman diseases and disorders. It is simple and non-invasiveway to identify diseases and disorders without affecting the functioning of body organs or any part of the body. In last decade the scanning technique made exceptional progress in visualizing of specific biological process or organ or any part of the body.Various techniques are used for diagnosis or visualize images like Magnetic Resonance Imaging, Computed Tomography, Ultrasound, Endoscopic Ultrasound Scan, X-rayetc.

Single Photon Emission Computed Tomography (SPECT) And Positron emission tomography (PET) are two scanning techniques which areused to obtains images from multiple angle of organ by using radiopharmaceuticals like Hexamethylpropyleneamineoxime(HMPAO) is a nuclear isomer which emit Gamma Rays, this imageobtained through detecting gamma rays which is emittedby radioisotopes or nuclear medicines. The scientisthas inventedmore than 200 chemicals which is absorbed by the body and from those no harmfulside effects or little effect on the body. Now,these radioisotopesregularly used as tracers in the biological substance to visualize scan images.Procedure starts with a administration specific radiopharmaceuticals in dosage form byoral, inhalation or injected into particular part body underexamination. this administrated radiopharmaceuticalisabsorbing by particular organ or tissues then which emit radiation which then detected,scanner visualize the structure of that particular part, from where the radiations are emitted and with the help scan visuals we can evaluatefunctioning of body organs.

Keywords: SPECT, PET.

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NUCLEAR MEDICINE IN HUMAN HEALTH

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ABSTRACT

Nuclear Medicine is a branch of medical science that deals with radioactive material (Radiopharmaceuticals) in diagnosis and treatment of various types of diseases. The procedure and method of nuclear medicine is very effective, safe and painless diagnostic treatment. In nuclear medicine treatment specific amount of radioactive substance is administered into body through injection, oral route or through inhalation. These radiopharmaceuticals absorbed into body are then meant for diagnosis or treatment.These absorbed radiopharmaceuticals are traced by gamma cameras which works on the computer system to provide pictures of the area of the body organs (i.e., scan). A disease or poorly functioning tissue will emit different signals than healthy tissue.The severity of the disease is determined based on biological changes, molecular changes or anatomical changes in the body or that organ.

Examples of nuclear medicinal scan used in diagnosis of various diseases include PET/CT, SPECT, Bone scan, Cardiac scan, Gastric empting scan, Renal scan, etc.

Examples of treatment of diseases with help of nuclear medicine include Cancer,Grave's disease, Polycythemia-vera, Joint disease, etc.

Keywords: Radiopharmaceuticals, Cardiac scan.

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3D-QSAR ANALYSIS OF TRIS-INDOLE HYBRID SCAFFOLD WITH OXADIAZOLE FOR THE MANAGEMENT OF TYPE-II DIABETES MELLITUS

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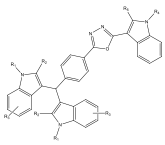
ABSTRACT

Diabetes mellitus is a metabolic disorder characterized by a congenital inability to transport glucose from the bloodstream into cells. At present it is estimated that 150 million people, worldwide and it may increases to 300 million by 2025. Alpha glucosidase plays a vital role in carbohydrate metabolism by releasing monosaccharides.The indole moiety is perhaps the most widely spread nitrogenheterocycle in nature. A quantitative structure activity relationship (QSAR) study on a series of substituted tris-indole hybrid with activity on α-glucosidase was made using various thermodynamic, topological and molecular descriptors. Several statistical regression expressions were obtained using multiple regression analysis. Amongst them, tri parametric models were found to be best on various statistical criteria with significant correlation coefficient.



PIC= 0.239(± 0.030) RDF040v + 0.086(± 0.009) RDF070e +0.32489(±0.156) Mor20u+5.040(± 0.237)

n=21, r=0.985, r^2=0.970, r^2_{adj}=0.965, variance=0.014, SEE=0.119, QF=8.274, PE=0.004, F=183.611, Q^2=0.953, S_{press}= 0.148, S_{DEP}=0.133.

QSAR study revealed that constitutional, radial distribution function (RDF) and MoRSE code descriptors have significant impact on the antidiabetic activity of the studied compounds. The developed QSAR models can be used to discover new effective antidiabetic leads for further development of molecules for the management of diabetes.

Keywords: QSAR, Diabetes mellitus, RDF

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NANOCARRIERS: PROMISING VEHICLE FOR BIOACTIVE DRUGS

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ABSTRACT

Nanotechnology is a novel area of science that provides, with a hope, the tools and technology to work at atomic, molecular and supramolecular levels leading to creation of devices and delivery systems with fundamentally new properties and functions. Nanocarriers offer a number of advantages making it an ideal drug delivery vehicle. Nanocarriers can better deliver drugs to tiny areas within the body. Nanotechnology is so complementary to biotechnology that promises to bridge the gaps between 'the structure' and 'the function' of bimolecular as well as between human physiology' and 'pathophysiology. Development of new delivery systems that deliver the potential drug specifically to the targets in order to meet the therapeutic needs of the patients at therequired time and level remains the key challenge in the field of pharmaceutical biotechnology. Developments in this context to achieve desired goal has led to the evolution of the multidisciplinary field nanobiotechnology which involves the combination of two most promising technologies of twenty-first century, Biotechnology and nanotechnology. Nanobiotechnology encompasses a wide array of different techniques to improve the delivery of biotech drugs, and Nanoparticles offer the most suitable form whose properties can be tailored by chemical methods.

Keywords: Nanocarriers , Bioactive Drugs , Drug Delivery System

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CACTUS: A BLEND OF THERAPEUTICS

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ABSTRACT

Cactus a well known naturally occurring plant and health food highly recognized as valuable source of Nutraceuticals, worldwide. It has recently received a lot of attention both by health professionals and the common population for improving overall well-being, as well as in the prevention of diseases. It has been used in traditional folk medicine because of its role in treating a number of diseases and conditions, including cancer, hypertension, hypercholesterolemia, rheumatic pain, gastric mucosa diseases, asthma, obesity, hepatitis, diabetes & hyperlipedemia. The great number of potentially active constituents and their multifunctional properties makes cactus (fruits and cladodes) perfect candidates for the production of health-promoting food and food supplements. Although traditionally appreciated for its pharmacological properties by the Native Americans. This review provides clinical and experimental evidences about the immense therapeutical properties and its highly significant phytochemicals that contribute to its action like hypoglycemic, hypolipidemic, hypocholesterolemic and neuroprotective in order to give the basis of their use in the prevention and cure of some chronic diseases through naturaceutical benefits of cactus.

Keywords: Nutaceuticals, Hepatitis, Neuroprotective

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REVIEW ON POLYMER USED IN NOVEL DRUG DELIVERY SYSTEM

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ABSTRACT

Polymers have been used as a main tool to control the drug release rate from the formulations. Extensive applications of polymers in drug delivery have been realized because polymers offer unique properties which so far have not been attained by any other materials. Advances in polymer science have led to the development of several novel drug-delivery systems. A proper consideration of surface and bulk properties can aid in the designing of polymers for various drug-delivery applications. These newer technological developments include drug modification by chemical means, carrier based drug delivery and drug entrapment in polymeric matrices or within pumps that are placed in desired bodily compartments. These technical development in drug delivery/targeting approaches improve the efficacy of drug therapy thereby improve human health. Polymer chemists and chemical engineers, pharmaceutical scientists are engaged in bringing out design predictable, controlled delivery of bio active agents. Biodegradable polymers have been widely used in biomedical applications because of their known biocompatibility and biodegradability. In general natural polymers offer fewer advantages than synthetic polymers. The following review presents an overview of the different biodegradable polymers that are currently being used, their properties, as well as new developments in their applications.

Keywords: Biodegradable polymers, biocompatibility, biodegradability

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NUCLEAR TECHNOLOGY FOR ADVANCE CANCER (TREATMENT AND DIAGNOSIS)

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ABSTRACT

Cancer is one of the biggest life threatening diseases that spread all over the world and causes nearly 8.2 million deaths every year. The Nuclear Medicine and technologies offers a broad spectrum of diagnostic and therapeutic services for different category of cancer and other disease, including oncology, cardiology, nephro-urology, orthopaedics, rheumatology and neuropsychiatry. Nuclear medicine and radiation therapies for lymphoma, bone, liver and neuro-endocrine malignancies are advancing rapidly. Nuclear medicine techniques in oncology can recognize and localize primary tumors, depict extent of disease, and monitor response of treatment. Nuclear Medicine is used in hyperthyroidism, thyroid cancer, palliation of bone pain, and neural crest tumors. High-energy radiation like X-rays, gamma rays, and charged particles are used in Radiation therapy which causes shrinkage of tumors and kill cancer cells by damaging their DNA so the nucleus of cell cannot divide and grow that is leads to cell death. This Nuclear Medicine also diagnose diseases in their initial stages such as cancer including breast cancer, thyroid cancer, prostate cancer etc, through use of imaging devices such as PET (positron emission tomography) / CT (computed tomography) and SPECT (single photon emission computed tomography)/CT (computed tomography).Advancements in nuclear medicine that could significantly hasten, simplify, and reduce the cost of delivering and improving health care. In case of cancer the targeted radionuclide therapeutics could be used, which deliver doses of radiation using targeting moiety.

Keywords: Nuclear Medicine, Cancer, Tumor.

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RECENT ADVANCES IN CONTROLLED RELEASE FLOATING DRUG DELIVERY SYSTEM

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ABSTRACT

The intention of writing this review on controlled release floating drug delivery systems was to compile the new literature in pursuit of giving detailed information on the pharmaceutical basis of their design, classification, factors affecting gastric residence time, in-vitro techniques, and in-vivo studies to evaluate the performance and application of floating drug delivery systems. This article provides an overview of the approaches to design, highlighting the main benefits of this type of oral dosage forms and providing a description of current challenges and advances toward improving manufacturing practices and product quality. The objective of this study is to review on its current advancement and its future. These systems are useful to several problems encountered during the development of a pharmaceutical dosage form.

Keywords: Controlled release, floating drug delivery system;

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FUTURE ASPECTS OF NUCLEAR MEDICINE IN HEALTHCARE

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ABSTRACT

Nuclear Medicine provides diagnosis and therapy with different radiopharmaceuticals. It works on the concept of "Theranostic", a combination of therapy and diagnostics using the same biomolecular labeled with different radioisotopes to provide specific dose of radiation inherently synergistic imaging and therapy. Ituses biomolecules tagged with radioactive isotopes that can recognize different molecular targets in the body or root out criterion of malignant and benign conditions. The distribution of trace amounts of a radioactively labeled molecule, known as a radiotracer, can be mapped and followed noninvasively anywhere in the human body using a dedicated system, such as a single photon emission computed tomography (SPECT) system or a positron emission tomography (PET) system.Molecular imaging is non-invasive, effective and safe for the diagnosis, staging, prediction, and follow-up of many clinical indications. It helps distinguish early responders from non-responders, thus, saving patients from unnecessary treatments, which reduces patient discomfort and side effects.There are various advantages of Nuclear medicine over traditional medicine such as molecular imaging helps individualize patient treatment, it help reduce healthcare costs ultimately, this will lead to improved quality of life. Nuclear medicine techniques play a vital role for the development of new drugs and to accelerate research into future treatments of disorders including schizophrenia, movement disorders, Alzheimer's disease, coronary artery disease and inflammatory and various other severe diseases.

Keywords: Nuclear Medicine, Radiopharmaceuticals, Healthcare.

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A REVIEW: FLOATING PULSATILE DRUG DELIVERY SYSTEM FOR CHRONOTHERAPY OF HYPERTENSION

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ABSTRACT

In recent years, scientific and technological advances have been made in the R and D of new drug administration systems by reduces physiological problems, for example such as short gastric residence time and changeable gastric emptying time. Several methods are currently used to prolong gastric residence time, including floating-drug delivery system, swelling and expansion system, polymeric bioadhesive system, modified-form system, high-density system, and other devices delayed gastric emptying. By using the aid of floating administration of drugs to avoid the dumping of doses, a desirable release is obtained as controlled and delayed. A mixture of pulsatile principles and floating of the drug delivery system appears to have the upper hand that a drug can be released into the upper GI tract after a defined period of time without drug release. The concept of the floating pulse drug delivery system (FPDDS) was applied to improve the gastric residence of the dosage form having a lag phase followed by a burst release. Chronopharmacotherapy, the pharmacological regimen based on the circadian rhythm, regulates many bodily functions in humans that is, metabolism, physiology, behavior, sleep patterns, hormone production, etc. Several diseases such as peptic ulcer, asthma, arthritis, cardiovascular diseases and attention deficit Syndrome in children. To overcome the limitations, flotation and lag control were prepared by means of floating pulsatile drug delivery systems, for which the release control system intervenes mainly in control of the release, such as rupturable membranes and swelling, soluble or erodible coating, capsule shaped system and multiparticulate system.

Keywords: Gastric Residence Time, Floating Drug Delivery System, Chronotherapeutic, Circadian Rhythm, Lag Time, Avoid Dose Dumping.

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ECO-FRIENDLY METHOD OF SILVER NANOPARTICLES FABRICATED BY GREEN SYNTHESIS

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ABSTRACT

Nanotechnology is currently a flourishing field provides a novel way to fabricate nanoparticles exploring biological sources. Eco friendly methods of green mediated synthesis of nanoparticles are the present research in the limb of nanotechnology. A variety of preparation techniques have been reported for the synthesis of silver NPs; notable examples include, laser ablation, gamma irradiation, electron irradiation, chemical reduction, photochemical methods, microwave processing, and biological synthetic methods. Silver NPs have gained considerable interest because of their unique properties, and proven applicability in diverse areas such as medicine, catalysis, textile engineering, biotechnology, nanobiotechnology, bio-engineering sciences, electronics, optics, and water treatment. These NPs have significant inhibitory effects against microbial pathogens, and are widely used as antimicrobial agents in a diverse range of products.

The flexibility of silver nanoparticle synthetic methods and facile incorporation of silver NPs into different media have encouraged researchers to further investigate the mechanistic aspects of antimicrobial, antiviral and anti-inflammatory effects of these NPs.Silver nanoparticles can delivery many therapeutics agents to target site of the disease. Green synthesis method is preferred from synthetic method of Silver nanoparticles. Silver nanoparticles is new era of drug delivery for delivering various therapeutics agents, it can have synergetic effects along with active pharmaceutical ingredients.

Keyword: Silver nanoparticles, synergistic and additive effects, antimicrobial properties

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A REVIEW ON PRESENT STATUS AND NEED OF COSMETOVIGILANCE IN INDIA

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ABSTRACT

Cosmetovigilance refers to the post marketing surveillance of any health related undesirable effects possibly due to the use of cosmetic products. The purpose of Cosmetovigilance is to collect, analyze and assess the adverse reactions occurring in consumers to identify any potential health risks. India is fourth largest cosmetic market in the Asia pacific region after Japan, China and South Korea. In India, cosmetics are regulated as per Drugs and Cosmetics Act 1940 and Rules 1945. The unwanted or adverse reactions due to cosmetic products are unnoticed due to lack of proper organized reporting system. At present there is no cosmetovigilance programme running in India and hence there is no reporting of adverse events in cosmetics. Countries like Italy and France have started separate cosmetovigilance programme. In India as far as drugs are concern there is post marketing vigilance system usually focus on adverse reactions of drugs, recently much consideration is given to medical devices, blood products, biologics, special nutritional and natural products, where as less attention has been addressed to adverse reactions related to cosmetic products. India can initiate to have formal cosmetovigilance system. Thus, the process of cosmetovigilance is evolving and coming up as a strong regulatory science to protect public health and beauty.

Keywords: Cosmetic, Drug, Cosmetovigilance, Adverse events, post marketing vigilance.

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BICONTINUOUS LIQUID CRYSTALLINE NANOPARTICLES: AN UPDATE

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ABSTRACT

Cubosomes are discrete, sub-micron, nanostructured particles of the bicontinuous cubic fluid crystalline stage. It comprise of honeycombed structures isolating two interior fluid channels and a substantial interfacial territory. Cubosomes are made out of polymers, lipids and surfactants with polar and non-polar segments consequently said as amphiphilic. Along these lines cubosomes are bicontinuous cubic fluid stage encasing two separate districts of water isolated by surfactant controlled bilayers and thus the prodrugs and cyclodextrins can be joined into it among others. Cubic fluid gems are physically straightforward and isotropic stages that are steady in abundance water and demonstrate a novel framework for the creation of pharmaceutical measurements shapes. The structure of cubosomes for the most part keeps up the viability; dependability of actives, for example, nutrients and proteins. Cubosomes are thermodynamically steady; enduring inconclusively. Colloidal scatterings of cubosomes can be balanced out by the expansion of polymers. Enhanced strength of medication in definition, wanted molecule measure run, most extreme medication stacking limit and all around controlled medication discharge made cubosomal frameworks better than other novel conveyance frameworks like strong lipid nanoparticles, microemulsions, microspheres and liposome. The decision of method relies upon the idea of polymer just as the idea of medication and the term of treatment. The cubosomes offer all around controlled conveyance to assortment of medication hopefuls like mitigating mixes, neighborhood soporifics, anti-microbials and anticancer medications and the lipid ensnared cubosomal immunizations. The controlled discharge utilization of these nanoparticles is of an extraordinary criticalness in cosmeceutical and pharmaceutical fields.

Keywords: Cubosomes, bicontinuous cubic fluid, Liquid Crystalline Nanoparticles

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RECENT ADVANCE IN SURFACTANT VESICLES NIOSOME FOR DELIVERY OF THERAPEUTICS AND ITS APPLICATION

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ABSTRACT

Surfactants are surface-active agent, which lower the interface tension between two phase systems. Such concepts were utilized in the drug delivery, surfactant vesicles (SV) niosomes. Niosomes are second generation of liposome which slightly different in composition of liposomes. Surfactant play significant role for noisome formation and utilization of different surfactant can possess different properties depending upon the surfactant such as bola surfactant, gemini surfactant. Bola surfactant niosomes have been used as topical for the treatment to skin cancer. Gemini based surfactant niosomes they are main comprised of amino acid-based surfactants and they have shown good penetration enhancer of drug into the skin. Gemini based niosomes able to delivery of anti-diabetics, chemotherapeutics, analgesic and antibiotics to treat different diseases. Surfactant vesicles are more prominent in delivering the drugs in controlled manner to skin through topical and transdermal route.

Keywords: Surfactant, Surface Active Agents, Bola Surfactant, Niosomes, Vesicles, Transdermal System.

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A REVEW ON SOLID LIPID NANOPARTICAL

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ABSTRACT

In the present scenario most of the developed and new discovered drugs are posing real challenge to the formulation scientists due to their poor aqueous solubility which in turn is responsible for poor bioavailability. One of the approaches to overcome above problem is the packaging of the drug in to particulate carrier system. Among various carriers, lipid emerged as very attractive candidate because of its unique property of enhancing the bioavailability of poorly water soluble drugs. Solid lipid nanoparticles are one of the novel potential carrier systems in the range of 100-150 nm as alternative materials to polymers which is identical to oil in water emulsion for parenteral nutrition, but the liquid lipid of the emulsion is replaced by a solid lipid. They have many advantages such as good biocompatibility, low toxicity and lipophilic drugs are better delivered by solid lipid nanoparticles and the system is physically stable. It also emphasizes on physical state of lipid (super cooled melts, different lipid modifications). Due to their unique size-dependent properties, lipid nanoparticles offer the possibility to develop new therapeutics. The incorporation of drugs into nanocarriers offers a new prototype in drug delivery that could be used for several levels of drug targeting. Different production methods which are suitable for large-scale production and applications of solid lipid nanoparticles are described. The characterization of solid lipid nanoparticles is generally carried out by photon correlation spectroscopy, scanning electron microscopy, differential scanning calorimetry etc.

Keywords: Nanoparticles, Calorimeter.

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IN-SILICO STUDIES, SYNTHESIS AND EVALUATION OF SUBSTITUTED PYRAZOLINES AS ANTI-MALARIAL AGENTS

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ABSTRACT

Malaria is a serious, mosquito borne life-threatening blood disease. Amongst them these 2 species – P. FalciparumandP. Vivaxare the most severe and fatal ones. In 2017, 99.7% P. Falciparummalaria cases were reported in the WHO African Region, 62.8% cases in the WHO regions of South-East Asia, 69% in the Eastern Mediterranean and 71.9% in the Western Pacific. In present study in-silico study was performed on 50 pyrazoline analogues as an antimalarial agent [PDB code: 4CQ8]. Pyrazolines play a significant role in the wide range of biological activities with strong efficacy. Their prominent effects are antibacterial, anti-depressant, immunosuppressive, anti-malarial, anti-convulsant, anti-oxidant, anti-tubercular, anti-tumor and anti-cancer activities. Results of in-silico study revealed that compound number 9 is most active compound to the active site of protein with amino acid Arg265, His185. Docking studies of the compounds was done with the help of Molegro Virtual Docker software using docking method to study their activity.

Keywords: In- Silico Study, Docking, Pyrazolines, Antimalarial.

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DESIGNING HYPOTHESIS OF QUINOLINE SULPHONAMIDE HYBRID AS AN ANTIMALARIAL SCHIZONTICIDAL BLOOD ACTIVE AGENT: MOLECULAR DOCKING APPROACH

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ABSTRACT

Malaria is deadly parasitic disease and approx 91% region of African countries are at risk of parasitic disease which lead to the 435000 deaths worldwide due to malaria. inspite of having several drugs for the treatment but the disease remains untreated due to the resistance caused in Plasmodium falciparum. Quinoline sulphonamide hybrid is a new approach to eradicate resistance. In the given study molecular docking study was performed using 30 quinoline sulphonamide hybrid analogues PDB code [4RAN]. On the basis of moldock score molecular docking results revealed that compound number 9 is most active compound to the active site of protein with amino acid Gly169, Lys165, Val187. Docking studies of the compounds was done with the help of Molegro Virtual Docker software using docking method to study their activity.

Keywords: Parasitic, Docking, Hybrid, Quinoline Sulphonamide

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INVESTIGATION OF ANTIOXIDAT AND ANTIDIABETIC POTENTIAL OF TRICHOSANTHES DIOCIA BY IN VITRO AND INVIVO METHOD

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ABSTRACT

α- amylase and α-Glucosidase are the two enzymes that regulate the post prandial glucose level in the body and thus considered as novel target for the development of new therapeutic agents for the treatment of diabetes. T. diocia has shown antioxidant and hypoglycemic potential in the previous studies, but its effect on the activity of α-Amylase and α-Glucosidase is not known till now. Extracts of roots and stems of T. diocia were fractionated by different solvents and then screened for their α-Amylase, α-Glucosidase and NO inhibitory potential. The best fraction was decided on the basis of the IC 50 values and then screened for its antidiabetic potential in the STZ treated rats. The ethylacetate fraction of root of T. diocia showed the highest α-Amylase, α-Glucosidase and NO inhibitory potential and reduced the blood glucose levels of the STZ treated diabetic rats significantly after 14 days of continuous administration. It is concluded that the ethylacetate extract of T. diocia root showed significant hypoglycemic activity in STZ treated rats and it may be due to their α-Amylase, α-Glucosidase and NO inhibitory action.

Keywords: α-Amylase, Diabetes, α-Glucosidase, Nitric oxide, Nitrite, Streptozotocin**.**

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AN INTRODUCTION OF NUCLEAR MEDICINE IN HEALTHCARE

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ABSTRACT

Nuclear Medicine is an integral part of modern healthcare. It is an excellent choice for physicians at the forefront of medicine. Nuclear Medicine involves the use of small amount of radioactive material to help diagnose and treat variety of diseases. A nuclear medicine examination produces images that can help physicians to diagnose a specific disease or capture images of infectious or tumors in specific organs. Nuclear medicine exams are commonly used to evaluate blood flow and function of heart, respiratory function, and blood flow to the lungs, kidney function and the presence of cancer. Recent advances have extended the range of molecular radiotherapies, which are now applied across a broad spectrum of diseases from arthritis and benign thyroid diseases to many types of cancer. Thus, nuclear medicine is in a key position to bring personalized or image guided therapy into routine clinical practices.

Keywords: Nuclear medicine, Broad spectrum, Arthritis, Healthcare

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NUCLEAR MEDICINES: CHALLENGES & OPPORTUNITIES IN DIAGNOSING & CURING MEDICINES AND ITS CURRENT PERSPECTIVE & STATUS IN INDIA

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ABSTRACT

Nuclear medicines involves the use of radiopharmaceuticals to access the bodily functions readily. With the use of radiotracers and radioactive isotopes a number of diagnostic studies can be done which provide complete etiology of the abnormal functioning of the organ and organ system. A number of nuclear medicine techniques such as PET & SPECT involve the use of these radiotracers. Most of the common radio-nuclide, like Iodine-131-sodium iodide for hyperthyroidism and thyroid cancer, Yttrium-90-ibritumomab tiuxetan (Zevalin) and Iodine-131-tositumomab (Bexxar) for refractory lymphoma, 131I-MIBG (metaiodobenzylguanidine) for neuroendocrine tumors, Samarium-153 or Strontium-89 for palliative bone pain treatment, have already been applied in the clinical emergencies. With the implementation of nuclear medicines a number of diseases like cancer, liver diseases, thyroid functioning can be treated as well as regulated and the same is expected to be applied to be used to cure some of the neurodegenerative diseases like Alzheimer's, Parkinsonism and epilepsy. The researchers must focus and concentrate on the development of such arena where it can be more applied with minimal side effects. Here in the present review an approach is made to elaborate the current Status of Nuclear medicines in India and the challenges in the development of nuclear medicine.

Keywords: Neuroendocrine, Radiotracers, Samarium-153 or Strontium-89