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REVIEW ARTICLE

Grewia asiatica Linn. - As a Phytomedicine: A Review

Sachin Tripathi, Mayur Chaurey, A. Balasubramaniam and N. Balakrishnan1

ABSTRACT:

Traditional medicine has served as a source of alternative medicine, new pharmaceutical and health care product. Among these herbal plants *Grewia asiatica* is widely used medicinal plant by tribal's throughout India. *Grewia asiatica* have reached wide spread acceptability as therapeutic agent for diabetic, antifertility, antioxidant, antipyretic, analgesic, antibacterial, antibiotic etc. This plant is also an alternative source of oil, hydrocarbon and phytochemical. This review present as detailed survey of the literature on phytochemistry, traditional and biologically evaluated medicinal uses of *Grewia asiatica*.

KEYWORDS: *Grewia asiatica*, Pharmacology, Phytochemistry.

Chitosomes: A Novel Drug Delivery System

AV Yadav, AS Shete, YN Gavane, AP Dabke, PV Kulkarni and SS Sakhare.....4

ABSTRACT:

Liposomes have been extensively investigated for drug delivery, drug targeting, controlled release and increased solubility. The major rate limiting step in the widespread use of this versatile drug delivery is the stability both physical and chemical. Considerable attention has been given to study the stability of liposomes for last three decades, but there remains much work to be done because the instability problems still limit their application. Chitosan, a biodegradable polymer can be coated over liposomes in order to stabilize them electrosterically. This had opened several novel pathways in drug delivery applications of liposomes and niosomes. Liposome or niosome formulation coated with chitosan is called as "chitosomes." The present paper intends to review the basics of chitosomes, interaction of chitosan with lipid, principle of formation of chitosomes, preparation methods, formulation and technological variables affecting Chitosan coating along with evaluation parameters and applications.

KEYWORDS: Liposome, Chitosan, Niosome, Stability, Chitosome, Vesicle

Ultrasound: A Versatile Tool in Organic Synthesis

Pratik Pandya, Saurabh K. Banerjee, Ravi Tiwari and Gurmeet Chabra.....13

ABSTRACT:

Ultrasonics, or what is commonly known as sonication, is an excellent example of how a scientific observation of physical properties of a material can be applied and turned into a useful tool. The study of sonochemistry is concerned with understanding the effect of sonic waves and wave properties on chemical systems. The chemical effects of ultrasound do not come from a direct interaction with molecular species. Studies have shown that no direct coupling of the acoustic field with chemical species on a molecular level can account for sonochemistry or sonoluminescence. Instead, sonochemistry arises from acoustic cavitation: the formation, growth, and implosive

collapse of bubbles in a liquid. This releases tremendous energy within the liquid due to the collective energy of the imploding cavities. This is demonstrated in phenomena such as ultrasound, sonication, sonoluminescence, and sonic cavitation. Sonochemistry is that branch, which deals with the study of sonic waves and their properties on chemical systems. Ultrasonication offers a great potential in the processing of liquids and slurries as it can easily be tested in laboratory scale for its effect on various liquid formulations.

KEYWORDS: Ultrasound, Sonochemistry, Cavitation, Sonication, Sonoluminescence.

Topical Gels: A Review

Loveleen Preet Kaur, Rajeev Garg, G.D. Gupta.....17

ABSTRACT

Topical gels are semisolid systems in which a liquid phase is constrained within a three dimensional polymeric matrix of natural or synthetic gum in which high degree of physical or chemical cross linking has been established. Topical gels present ideal candidate for variety of application due to its intermediate behavior between solid and liquid materials. Topical gels have received significant attention over the past few decades because it is a topic of interest to the scientists working in industry, research and development, education, drug control administration and professional. The objective of this article is to review the fundamental and present advances in topical gels including classification and method of preparation. The application of hydrogel on drug delivery system is separately discussed. Special emphasis is given on its classification, method of preparation and evaluation parameters.

Bioadhesive Drug Delivery Systems - Background, Applications and Trends

MHG Dehghan, Baby H Dandge, Varsha M Gaikwad and Sachin Jagdale.....25

ABSTRACT

Mucoadhesive drug delivery systems have been used to improve and enhance drug bioavailability because the systems can contact with the absorption surface and prolong residence time resulting in a better absorption. Several polymers, particularly hydrophilic polymers containing numerous hydrogen bond (H-bond) forming groups (i.e. hydroxyl, carboxyl, amine and amide groups) have been investigated for mucoadhesive properties. The interaction between mucus and mucoadhesive materials is a result of physical entanglement and secondary bonding, mainly H-bonding and Van der Waals interaction.

KEYWORDS: Mucoadhesive drug delivery, mucoadhesion, bioadhesive polymer

Pulsatile Drug Delivery Systems: Novel Approach on Control Drug Delivery

Ram S Sakhare, Ashish B Roge, RL Bakal and AV Chandewar.....32

ABSTRACT:

Pulsatile drug delivery system is a novel strategy developed to improve the efficiency of controlled drug delivery system in the treatment of the disease dependant on circadian rhythm such as asthma, arthritis, duodenal ulcer, cardiovascular diseases. It release drug in a pulsatile or staggered profile. Pulsatile drug delivery systems (PDDS) are gaining importance as these systems deliver the drug at specific time as per the pathophysiological need of the disease, resulting in improved patient therapeutic efficacy and compliance. This review focus on various methods that have been used for pulsatile release of drug. These systems have the potential to improve the quality of life for patients undergoing therapy with a variable dosing regime.

KEYWORDS: Circadian rhythm, PDDS, Capsular systems, Osmotic systems, Soluble or Erodible polymer coating, Rupturable membrane.

Nanosuspensions: A Promising Drug Delivery Strategy

Vijay Shinde, P Amsa, S Tamizharasi, D Karthikeyan, T Sivakumar and Abhijit Kosalge.....39

ABSTRACT:

An increasing number of newly developed drugs are poorly soluble, in many cases drugs are poorly soluble in both aqueous and organic media excluding the traditional approaches to overcoming such solubility factors and resulting in bioavailability problem. An alternative and promising approach is the production of drug nanoparticles (nanosuspensions) to overcome these problems. Techniques such as media milling and high pressure homogenization have been used commercially for producing nanosuspensions. Nanosuspension can be delivered by various routes such as oral, parenteral, pulmonary and ocular system. It also possible to convert nanosuspension to patient- acceptable dosage forms like tablet, capsule and lyophilized powder products. The present review focuses on various manufacturing and formulation perspectives and application of nanosuspension as drug delivery system.

KEYWORDS: Homogenization, bioavailability, lyophilization, nanosuspension.

Colon Targeted Drug Delivery System – A Review

AD Kajale, BV Bakade, MA Channawar, SR Gawande, RL Bakal and AV Chandewar.....45

ABSTRACT:

Oral delivery of drugs to the colon is valuable in the treatment of diseases of colon (ulcerative colitis, Chron's disease, carcinomas and infections) whereby high local concentration can be achieved while minimizing side effects that occur because of release of drugs in the upper GIT or unnecessary systemic absorption. The simplest method for targeting of drugs to the colon is to obtain slower release rates or longer release periods by the application of thicker layers of conventional enteric coatings or extremely slow releasing matrices. Various pharmaceutical approaches to colon targeted delivery system are a) covalent linkage of drug with carrier b) coating with polymers c) coating with pH sensitive polymers d) coating with biodegradable polymers. Colon targeted drug delivery system is of special importance in systemic delivery of protein and peptide drugs also important when delay in drug absorption require from therapeutic point of view in the treatment of nocturnal asthma, angina etc.

KEYWORDS: Colon targeting , site specificity, colonic diseases, biodegradable polymers.

Co-processed Pharmaceutical Excipients – A Brief Review

Anuja Patil, VJ Kadam and KR Jadhav.....50

ABSTRACT:

There is need of pharmaceutical industry for excipients with improvised properties to aid fast and cost effective development and processing. This need is due to limitations of existing excipients failing to comply with all the functionalities of an ideal excipient. Functional Synergy due to co-processing of excipients provides effective solution to address this need. Number of new coprocessed excipients have arrived in market which are expected to deliver new performance characteristics which will distinguish them from existing, well-accepted agents.

KEYWORDS: novel coprocessed excipients, direct compression, modified release coprocessed excipients.

Herbal antioxidant: Vitamin C

Rupali Kirtawade, Pallavi Salve, Anita Kulkarni and Pandurang Dhabale.....58

ABSTRACT:

An antioxidant can be defined as any substance that when present at low concentrations compared to that of an oxidizable substrate, significantly delays or inhibits the oxidation of that substrate. Antioxidants are capable of stabilizing, or deactivating free radicals before the latter attack cells and biological targets. They are therefore critical for maintaining optimal cellular and systemic health and well-being. Vitamin C, also called ascorbic acid, helps to maintain healthy collagen in the skin, repair damaged tissue, promote healthy teeth and bones, and boost the immune system. Vitamin C is one of the more powerful and well-known antioxidants. Antioxidant activity of

ascorbic acid involves a hydrogen transfer rather than an electron transfer. 3-alkyl-ascorbic acids, have been tested as antioxidants and found to be very strong chain-breaking agents with a high affinity for biomembranes. Antioxidant properties of vitamin C is useful in various diseases like Angina, Rashes, Bronchitis, Glaucoma.

Abrus precatorius- A Poison of Pharmacological Therapeutic Potential

Vikas Gupta, Parveen Bansal, Payal Mittal, Sanjiv Kumar, Savita Sharma.....62

ABSTRACT:

Abrus precatorius is a weedy subtropical plant the seeds of which are a potent known poison whereas if these seeds are purified as per the methods given in the old Ayurvedic texts it proves to be a very good therapeutic agent with multidimensional usage. This communication intends to put all the pharmacological and therapeutic uses of this plant at a common platform so as to enable the scientists to explore other therapeutic characteristics inherent in this plant.

KEYWORDS: *Abrus precatorius*, poison, pharmacological potential.

Treatment for the management of Obsessive-Compulsive Disorder in Children: A Review

Uday Gaikwad and Milind Parle.....66

ABSTRACT:

Obsessive-Compulsive Disorder (OCD) is characterized by absurd, recurrent and persistent thoughts (obsessions) followed by certain stereotyped actions (compulsions). Obsessive-Compulsive disorder can impair all areas of brain functioning and produce devastating effects on patients and their families. Therefore, there is necessity to aware about the OCD in children and different treatments for its management. The Group A Beta-Hemolytic Streptococcal (GABHS) infections produce antineuronal antibodies that adversely affect basal ganglia cells might play part in etiology of OCD in children. As a result of obsessions, (usually obsessions concerning dirt and contamination, or fear of harming others), many children with OCD develop an avoidant behavior. The newer generation of antidepressant drugs viz. fluvoxamine, fluoxetine, paroxetine, sertraline and citalopram have also been found useful in management of OCD. Neurosurgical treatments have been used for the management of chronic, severely distressing forms of OCD where conventional treatments are ineffective. Psychopharmacological treatments have also been found useful in reduction of repetitive unpleasant behavior. Pharmacological and psychopharmacological treatments combinely have been providing strong effective management of in vivo serotonin impairment as well as reduction of repetitive unpleasant behavior which account for characteristics of OCD.

KEYWORDS: Obsession, Compulsion, Antidepressant, Psycho treatment

RESEARCH ARTICLE

Preparation, Physicochemical Characterization, Dissolution and Formulation Studies of Telmisartan Cyclodextrin Inclusion Complexes

Rajesh Kane, Suresh Naik, Shrinivas Bumrela and Bhanudas Kuchekar.....69

ABSTRACT:

The objective of this research was to prepare, characterize and to study dissolution properties of inclusion complexes of telmisartan (TLM), with β - cyclodextrin and hydroxypropyl- β - cyclodextrin and to study its effect on rate of dissolution. The phase solubility curve was classified as an A_p type for both the CD's, which indicated formation of inclusion complex of TLM in 1:2 stoichiometries with β -CD and HP- β -CD.

The inclusion complexes in molar ratio of 1:2 were prepared by various methods such as kneading, co-evaporation and physical mixing. The molecular behavior of TLM in all samples were characterized by fourier- transform infrared (FTIR) spectroscopy, differential scanning calorimetry (DSC) and powder x-ray diffraction studies.

The result of studies showed inclusion of TLM molecule into cyclodextrin cavities. The highest improvement in *in-vitro* dissolution of TLM was observed in complex prepared with HP β -CD using kneading method. Mean

dissolution time (MDT) and similarity factor (f_2) indicated significant difference between the release profile of TLM from complexes, physical mixture and pure TLM.

The highest improvement in solubility and *in-vitro* drug release were observed in inclusion complex prepared with HP β -CD by kneading method. Improvement in solubility and *in-vitro* drug release of Telmisartan were more with HP β -CD as compared to β -CD

KEYWORDS: Telmisartan, β -cyclodextrin, hydroxypropyl- β -cyclodextrin, inclusion complexes, dissolution studies.

Study of Antifungal Effects of *Trachyspermum ammi* (L.) Sprague

Manoj M Nitalikar, Shrikant M Nitalikar, Girish A Gunjotikar and Prashant D Aragade.....76

ABSTRACT

In the recent years there has been increasing interest in the use of substances from natural origin, as there are certain problems in concern with the safety of synthetic compounds. In the present study antifungal property of the seeds of *Trachyspermum ammi* (*Umbellifereae*) has been conducted. The seeds are powdered and 2% seed powder was added in the plate containing molds of *Aspergillus niger*.

It has shown remarkable inhibition in the growth of *Aspergillus niger* and also suppressed the growth of other fungi.

KEYWORDS: Antifungal, *Trachyspermum ammi*, *Aspergillus niger*

Effect of Some Penetration Enhancers on *In-vitro* Permeation of Glibenclamide

SD Pande, SB Joshi, SB Kasture and VM Aurangabadkar.....79

ABSTRACT

Transdermal drug delivery system is one of the novel routes for systemic delivery of drugs through the skin. The main barrier for systemic absorption of drug through the skin is the upper most layer of skin i.e. the stratum corneum. Glibenclamide is a sulfonylurea category of drug used in the treatment of type II diabetes. It is found that glibenclamide can be permeated through the skin but its permeation is low. Therefore its permeation was studied through the freshly excised rat abdominal skin as such and in presence of some penetration enhancers. Penetration enhancers are the substances that facilitate the absorption of drug through the skin by temporarily diminishing the impermeability of the skin. In the present study permeation enhancers have been used to increase the permeation of glibenclamide through the freshly excised rat abdominal skin. The permeation enhancers used are eucalyptus oil, menthol, ethyl acetate and oleic acid respectively. It is found that eucalyptus oil has more effect as compared to other enhancers used in the study. The results are reported in this article.

KEYWORDS: Transdermal drug delivery, penetration enhancer, glibenclamide.

Validated Method for the Quantification of Sodium Azide in a Range of 'Sartan' Drugs by Ion Chromatography

Dharmendra Kumar Kushwah, Prakash Yashwant Kohle, Rajesh D Joshi, Bakul Rajyaguru, Rajeev Pandey and Brajesh Vishwakarma.....82*

ABSTRACT:

Sodium azide is harmful to our body organs specially heart and brain, because heart and brain use a lot of oxygen, Sodium azide prevents the cells of the body from using oxygen. For the determination of content of free Sodium azide in a range of sartan drug, a method has been developed and validated on Ion Chromatograph (IC). Strongly basic anion exchange resin column (250 x 4.0) mm is used with 50 x 4.0 mm guard column of same stationary phase. Mobile phase consisted of 2.8 ml of Sulphuric acid per litre of water. The method is validated for its Specificity, Precision, Accuracy, Linearity Ruggedness and Robustness. Sodium azide (as azide) is linear from 0.082 μ g/ml to 0.61 μ g/ml, with Correlation Coefficient 0.99933. Limit of quantitation of the method is 0.082 μ g/ml and Limit of Detection is 0.041 μ g/ml.

KEYWORDS: Sodium azide, IC, Ion exchange column, Limit of Quantitation, and Limit of Detection.

Controlled Release Nateglinide Tablets Using Na-CMC and HPC Hydrophilic Polymer

Suhas Nalle , Rupali Sarpate, Mallikarjuna Setty, Patan Inayat and Anand Deshmuk.....87

ABSTRACT:

Nateglinide, a novel anti-diabetic drug used for management of type II (noninsulin-dependent) diabetes mellitus (NIDDM) was formulated into matrix tablet using hydrophilic polymers such as HPMC, HPC, and Na CMC as release retardants. In present study, the hydrophilic matrixes prepared were containing a blend of one or more gel forming polymer and then the binary mixture was finally prepared having different concentrations. The concentration of nateglinide was kept constant and MCC was used as filler. The tablets were evaluated for hardness, friability, thickness, drug content, invitro release. In the present study, the effect of polymer concentration, binary polymer mixture and direct compression methods on drug release profiles was studied. It was observed that the type of polymer and its concentration influences the drug release from matrix tablets. Matrix tablets that contained a blend of Na CMC and cellulose ethers, successfully sustained the release of nateglinide for a period of 12 hrs. Nateglinide was predominantly released by non-fickian (anomalous) mechanism that is diffusion through the honeycomb network and polymer relaxation.

KEYWORDS: Nateglinide, Matrix tablet, HPC, HPMC, NaCMC

Analgesic Effects of Fruits of *Silybum marianum* L. Gaertn

Manpreet Kaur and Harinder Kaur.....92

ABSTRACT:

The present study was designed to investigate the analgesic effects of fruits of *Silybum marianum* L. Gaertn. The ethylacetate and ethanol extracts of *Silybum marianum* L. Gaertn fruits showed dose-dependent and significant (P<0.05) increase in pain threshold in tail-immersion test. Moreover, both the extracts (100-200mg/kg) exhibits a dose-dependent inhibition of writhing and also showed a significant (P<0.001) inhibition of both phases of formalin pain test. The phytochemical screening of the extract showed the presence of flavonolignans, flavonoids, fixed oils and proteins.

KEYWORDS: Analgesic activity, Formalin pain test, Tail immersion test, *Silybum marianum*

The Analgesic Effect of *Leucas aspera* (Wild) Link Extract in Experimental Mice

Karthikeyan. M and Deepa Karthikeyan.....95

ABSTRACT:

Leucas aspera(Wild.)Link (Lamiaceae) is a plant used in traditional medicine for various disorders. The aim of this work was to evaluate the antinociceptive activity of the aqueous extract of *Leucas aspera* in animal models. In the acetic acid induced writhing model , the extract at a dose of 200 and 400 mg kg⁻¹ body weight showed significant (p<0.01) inhibition of writhing response of 52.63 and 64.35 % respectively. In the hot plate test the extract produced a significant (p<0.01) increase in the latency in a dose related manner. This study established the analgesic properties of *Leucas aspera* (Wild.) Link.

KEYWORDS: *Leucas aspera*, whole plant, aqueous extract, analgesic activity, writhing test, hot plate test.

Anti-inflammatory activity of Ethanolic Extract of the Roots of the Plant *Caesalpinia sappan* Linn.

Jennifer F, Thomas AK, R amd Subrhamanyam EVS.....99

ABSTRACT:

In the present study the anti-inflammatory activity of ethanolic extract of the roots of the plant *Caesalpinia sappan*. (Family: Caesalpinaceae) was carried out. The preliminary phytochemical investigation revealed the presence of carbohydrates, proteins, triterpenoids, flavonoids, steroids and tannins. The ethanolic extract was subjected to anti-inflammatory study by Carrageenan induced paw edema model and Cotton pellet granuloma method in rats. The results of anti-inflammatory activities of ethanolic extract of the roots of the plant *Caesalpinia sappan* were compared with control and found to be statistically significant (P<0.01) at dose levels of 100mg/kg, 200mg/kg and 400mg/kg.

KEYWORDS: Anti-inflammatory; cotton pellet granuloma; *Caesalpinia sappan*; *Caesalpinaceae*.

HPLC and Colorimetric Methods for Estimation of Cefepime

Jane J, Prashant Kumar D. and EVS Subrahmanyam.....102

ABSTRACT:

A simple, rapid and economical HPLC method and two colorimetric methods have been developed for the estimation of cefepime in its bulk and Pharmaceutical dosage forms. Method I involved an isocratic elution of Cefepime in a column of Phenomenex C18, 250 X 4.6, 5 μ , using a mobile phase composition of Methanol: Water (70:30, v/v). The flow rate was 0.8 ml/min and the analyte was monitored at 250 nm. Method II was based on oxidative coupling reaction between cefepime and MBTH in presence of ferric chloride anhydrous to produce a green colored chromogen with an absorption maximum of 639nm. The chromogen obeyed linearity in the range 2-12 μ g/ml. Method III is based on reaction between cefepime and 1, 10 phenanthroline in presence of ferric ammonium sulphate to produce a red color chromogen with absorption maximum of 493nm. The chromogen obeyed linearity in the range 0.5-3 μ g/ml.

KEYWORDS: HPLC, Colorimetry, cefepime

Pharmacognostical Studies of *Zanthoxylum tetraspermum* Wight and Arn

VR Ravikumar, M Thiagarajan, T Sengottuvel, V Gopal and B Parimaladevi.....106

ABSTRACT:

The leaves of *Zanthoxylum tetraspermum* Wight and Arn (Rutaceae) are reported to have a great medicinal value. The present study glimpses the pharmacognostical evaluation for the examination of morphological and microscopical characters, determination of leaf constants, ash values, and extractive values. Phytochemical screening including qualitative chemical examination was also carried out. This data reveals easy identification for the future investigators and an important aspect of drug studies.

KEYWORDS: *Zanthoxylum tetraspermum* wight and arn, Pharmacognostical, Phytochemical

Simultaneous Spectrophotometric Estimation and Validation of Metformin Hydrochloride and Glibenclamide in Bulk Drug and Pharmaceutical Dosage Form

B Srivastava, Uttam Singh Baghel, Pradeep Swarnkar and Shuchi Dave.....109

ABSTRACT:

Two simple, accurate, economical and reproducible spectrophotometric methods for simultaneous estimation of two-component drug mixture of metformin hydrochloride and glibenclamide in bulk and combined tablet dosage form have been developed. The first method employs formation and solving of simultaneous equations using 237.0 and 229.2 nm as two analytical wavelengths. The second method is absorption ratio method, which uses 237.0 and 225.0 nm as two analytical wavelengths. Both methods were statistically validated according to International Conference on Harmonization and recovery studies confirmed the accuracy of the proposed method.

KEYWORDS: Simultaneous spectrophotometric analysis, Absorption ratio method, Metformin hydrochloride and Glybenclamide

Formulation Strategy for Low Absorption Window Antihypertensive Agent

Ankit A. Kharia, S.N. Hiremath, A.K. Singhai, L.K. Omray and G.R Godge.....113

ABSTRACT:

An attempt was made to design and evaluate hydrodynamically balanced systems (HBS) of Diltiazem HCl hydrochloride using Locust bean gum and Methocel K4M as the polymers. All tablets contained an effervescent base consisting of sodium bicarbonate and citric acid. The tablets were prepared by direct compression method. All the designed nine batches of formulations were evaluated for hardness, friability, weight variation, drug content uniformity, swelling index, in vitro buoyancy, and drug release pattern. Estimation of diltiazem HCl in the prepared HBS was carried out by extracting drug with 0.1N HCl and analyzed at 236.4 nm spectrophotometrically. All formulations had floating lag time below 3 minutes and constantly floated on dissolution medium for more than 24

hours. These studies indicate that the proper balance between Locust bean gum and Methocel K4M can produce a desired drug dissolution profile. The proposed formulation showed good physicochemical properties, good stability and controlled drug release pattern, thereby improving the bioavailability of the drug.

KEYWORDS: Diltiazem HCl, Floating drug delivery systems, Absorption window

Antibiotic Therapy in Pediatric Patients

Wal Pranay, Wal Ankita, Srivastava Rishabh, Rastogi Prateek, Rai. Awani K.....118

ABSTRACT:

Antibiotics are among the most commonly prescribed drugs in pediatrics. Because of an overall rise in health care costs, lack of uniformity in drug prescribing and the emergence of antibiotic resistance, monitoring and control of antibiotic use is of growing concern and strict antibiotic policies are warranted. Study focuses with the objective of determining the proportion of pediatric patients receiving antibiotics and to assess the use of antibiotics in pediatric patients (prescription pattern). This was a prospective study for a period of six months (Jan, 2009 to June, 2009). Data were collected by reviewing medical charts of all patients hospitalized for >48 hours. All the patients receiving antibiotics were identified and included in the study. A total of 364 hospitalized children were evaluated; their median age was 42.3 months, and 58.52% were males. Antibiotics were prescribed to 267 of the 364 patients (73.35%). The prevalence was lowest (81.25%) in medical wards, higher (87.5%) in intensive care units and highest (88.83%) in surgical wards. Of the patients treated with antibiotics in surgical wards, 46.67% received the treatment as prophylaxis. The most frequently prescribed antibiotics were combination of amoxicillin and clavulanic acid and the Gentamicin. Broad-spectrum antibiotics are predominantly prescribed.

KEYWORDS: Pediatric patients, Antibiotics Drugs and Cosmetic Act, Acute respiratory infection, Acute watery diarrhea.

Formulation and Evaluation of Chitosan Nanoparticle of Acyclovir

P Amsa, Abhijit Kosalge, S Tamizharasi, D Karthikeyan, T Sivakumar and Vijay Shinde.....121

ABSTRACT:

The present study deals with formulation of Chitosan nanoparticles of Acyclovir in an attempt to increase its bioavailability with sustained action. Acyclovir is antiviral agent used to treat various types of herpes infections, having short half-life of 2.5-3.3 hours, and oral bioavailability 15-30%. Its anti-viral effect lasts for a few hours.

Acyclovir loaded chitosan nanoparticles were prepared by Ionotropic gelation method for oral delivery. Formulation were prepared in ten different drug ,polymer and crosslinking agent (TPP), and characterized for particle size, shape, percentage yield, drug entrapment, stability studies, zeta potential, FT-IR study, *in-vitro* drug release, release kinetics *in vivo* mucoadhesion study and *in vivo* absorption study.

The shape of nanoparticles was found to be spherical by scanning electron microscopy studies, whereas size ranging from 300 nm to 900 nm. FTIR study confirmed that there was no interaction between drug and polymer. Percentage yield and entrapment efficiency was in the range of $52.51 \pm 0.08\%$ to $71.04 \pm 0.03 \%$ and 37.42 ± 0.05 to $66.24 \pm 0.03 \%$ w/w respectively. No appreciable difference was observed in the extent of degradation of product during 60 days in the nanoparticles, which were stored at various temperatures. Zeta potential of formulation supports the minimum interaction between the particles. The *in-vitro* drug release study revealed that sustained release of some formulation last for more than 12 hour. The release followed zero order kinetics, which follows super case II transport, mucoadhesion property after 2.5 hours shows that 69.41 % and absorption of nanoparticles shows more than the compare pure drug.

KEYWORDS: Nanoparticles, Acyclovir, *in vivo* absorption study, *in vitro* drug release

Development of Absorbance Ratio Method for Simultaneous Estimation of Flupenthixol HCl and Melitracen HCl in their Combined Dosage Form

Imran A Sheikh, Manoj Charde, Avinash.V. Kasture.....127

ABSTRACT:

Simple, sensitive and specific spectrophotometric method was developed and validated for quantization of Flupenthixol HCl (FLU) and Melitracen HCl (MEL) in tablet dosage form. The new analytical method was developed based on the simultaneous estimation of drugs in a binary mixture without previous separation. In graphical absorbance ratio method was performed by absorbance at 283.60 nm and 229.40nm. Both the drugs FLU and MEL and its mixture follow Beer-Lambert's law in the range of 2 -10 µg/ml at all the selected wavelength. The percent estimation of mix drug in laboratory mixture was done to be 99.99± 1.078 and 99.63 ± 0.2038 for FLU and MEL respectively. The percent drug estimation in marketed formulation was found to be 99.96± 0.4340 and 99.90 ±0.1076. The average percent recovery was found to be 99.98±0.43and 99.91±0.10. The result of the method lies with in the prescribe limit of 98-102% shows that method is free from interference from excipients.

KEYWORDS: Flupenthixol HCl, Melitracen HCl, UV- Method, Validation

Hypoglycemic Activity of *Curculigo orchioides* Gaertn in Normal and Streptozotocin Induced Diabetic Rats

AK Jain, Naveen Sharma, Amit Upadhyay and Ashish Dixit.....558

ABSTRACT:

The purpose of this study was to study effects of *Curculigo orchioides* Gaertn rhizome on blood glucose level. The antihyperglycemic efficacy of ethanolic extract of the rhizome was evaluated in normal and streptozotocin-induced diabetic rats (STZ diabetic rats). The extract exhibited significant hypoglycemic activity when compared with the control group and to that of the effect produced by a standard antidiabetic agent Glibenclamide. The result also indicated dose dependent effect. The hypoglycemic effect produced by the extract may be due to the uptake of glucose at the tissue level or inhibition of intestinal absorption of glucose. We conclude that ethanolic extract of *Curculigo orchioides* Gaertn is a potential hypoglycemic agent and lends scientific support for its use in folk medicine.

KEYWORDS: *Curculigo orchioides*, Streptozotocin, Glibenclamide, Hypoglycemic

Development and Validation of RP-HPLC Method for the Estimation of Balsalazide in Pure and in Pharmaceutical Dosage forms

K Anandakumar, D Jothieswari, R Subathrai, K Varatharajan and G Sivansoyal.....136

ABSTRACT:

A simple, precise, rapid and accurate RP-HPLC method was developed and validated for the estimation of Balsalazide in bulk and in capsule dosage forms. Isocratic elution at a flow rate of 0.7 ml/min was employed on a Phenomenax Luna C₁₈ column (150×4.6mm; 5µ) at an ambient temperature. The mobile phase consists of Acetonitrile: Methanol: Triethylamine buffer (40:30:30% v/v). The effluents were monitored at 254nm and 20µl of sample was injected. Nifedipine was used as an internal standard (IS). The retention times for Balsalazide and IS were 3.42 and 5.07 min, respectively. The method obeys Beer's law in the concentration range of 10-50 µg/ml. The respective linear regression equation being $Y = 0.03727x + (-0.0084)$. The percentage assay of BSZ was 99.61% ± 0.106. The method was validated by determining its accuracy, precision and system suitability. The results of the study showed that the proposed RP-HPLC method is simple, rapid, precise and accurate, which is useful for the routine determination of BSZ in bulk drug and in its pharmaceutical dosage form.

KEYWORDS: Balsalazide, RP-HPLC, Internal standard method and Validation.

Stability Indicating RP-HPLC Method for Determination of Potassium Clavulanate in the presence of its Degradation Products

Sinha PK, Jeswani RM, Topgi KS and Damle MC.....141

ABSTRACT:

A stability indicating isocratic RP-LC method has been developed for the quantitative determination of Potassium Clavulanate in presence of its hydrolytic degraded products. Chromatographic separation was achieved on a C18 Nucleosil column with mobile phase consisting of 0.7% sodium dihydrogen phosphate and methanol in the ratio of 90: 10 v/v; retention time of the drug was 4.2±0.05 min, quantification was carried out at 230 nm with flow rate of 1 mL min⁻¹. In the developed LC method the resolution between potassium Clavulanate and products of degradation was found to be greater than 2 with r² value greater than 0.997.

KEYWORDS: Stability indicating, Potassium Clavulanate, RP-HPLC.

Pharmacoepidemiological Study of Learning and Memory Enhancing Medicines: A Comparison between Herbal and Allopathic Formulations

Jigna S. Shahand and Ramesh K. Goyal.....146

ABSTRACT:

Objective: To explore the usage trends and to find out the rationale of medicines used more commonly in Gujarat region for enhancing learning and memory.

Materials and Methods: The pharmacoepidemiological study was done using pretested questionnaires and interviews with 290 patients, 210 physicians, and 351 pharmacists from 12 districts of Gujarat.

Results and Discussion: Results of our pharmacoepidemiological study revealed that 65% of doctors prescribed LMEM as add on therapy with allopathic drugs. Majority of doctors were found to prescribe B-complex for common ailments to serious complications. In ayurvedic formulations, *Mentat* was highest prescribed formulation followed by *Ashwagandha*, *Shankhpushpi Syrup* and *Chyavanprash* etc. Forty-five herbal drugs were commonly used to enhance learning and memory. Evaluation of constituents in twenty-five marketed herbal LMEM revealed that *Bacopa monniera*, *Evolvulus alsinoides*, *Withania somnifera*, *Nardostychos jatamansi*, *Acorus calamus* and *Embelica officinalis* are used maximum for learning and memory enhancing effects. Maximum people using learning and memory enhancing medicines were between the age group of 21 to 40 years suggesting that students and persons of business/ service class are the highest users of these medicines. 25% in rural area and 45% in urban area were taking drugs suggested by doctors.

Conclusion: Our pharmacoepidemiological study revealed that *Bacopa monniera*, *Evolvulus alsinoides*, *Withania somnifera*, *Nardostychos jatamansi*, *Acorus calamus* and *Embelica officinalis* are used maximum for learning and memory enhancing effects. Most of herbal LMEM were sold without valid physician's prescription from the ayurvedic or general medical stores.

KEYWORDS: Learning, Memory, Bacopa monniera, Evolvulus alsinoides

In-Vitro Anthelmintic Activity of *Mussaenda frondosa*

EN Siju, GR Rajalakshmi, N Hariraj, KR Sreejith, Soumya Sudhakaran, EK Muneer and K Premalatha.....151

ABSTRACT:

Ethyl alcohol and aqueous extract of *Mussaenda frondosa* were investigated for their anthelmintic activity against *Pheretima posthuma*, *Raillietina spiralis*, *Ascaridia galli*. Three concentrations (10, 25, 50 mg/ml) of each extract were studied in activity, which involved the determination of time of paralysis and time of death of the worm. Piperazine citrate (10 mg/ml) was used as reference standard and distilled water as control. The result shows that ethyl alcohol and aqueous extract possess anthelmintic activity.

KEYWORDS: *Mussaenda frondosa*, Anthelmintic activity, Vermicidal, Phytoconstituents.

Synthesis and Antimicrobial Evaluation of Some 2- (Piperazinomethylamino) Imidazole Derivatives

SP Wate, AN Ingale and PS Tarte.....154

ABSTRACT:

Benzoin was reacted with aminomethamine in ethanol to yield 2-amino-4,5-diphenylimidazole, which on further reaction with dichloromethane in presence of ethanolic potassium hydroxide yielded 2-(chloromethylamino)-4,5-diphenylimidazole. The 2-(chloromethylamino)-4,5-diphenylimidazole was reacted with piperazine and its derivatives, which yielded 2-(piperazinomethylamino)-4,5-diphenylimidazole and its respective derivatives. All the compounds were characterized on the basis of IR and ¹HNMR spectral data were screened for antimicrobial activity.

Antipyretic Activity of *Piper nigrum* and *Nyctanthes arbor-tristis* in Different Dosage Forms

NB Ghiware and TM Nesari.....157

ABSTRACT:

Acute oral toxicity studies of the *Piper nigrum* Linn (Family: Piperaceae), and *Nyctanthes arbor-tristis* Linn (Family: Oleaceae), were carried out in rats. All external morphological changes, change in body weight, general systemic toxicity and necropsy were recorded. During acute toxicity study there was normal weight gain in the treatment group was observed. There were no significant signs of systemic toxicity and death was noted. No abnormalities were noted at necropsy. Tablet, liquid oral and suspension dosage forms of dried unripe fruits of *Piper nigrum* and dried leaves of *Nyctanthes arbor-tristis* in combination, were tested in brewer's yeast-induced pyrexia in rabbits to assess their antipyretic activity. The percent inhibition rate against increasing rectal temperature in rabbits was assessed for all test dosage forms and was found significant compared to that of control. The results indicate that liquid oral and tablet dosage forms possess good antipyretic property compared to suspension dosage form.

KEYWORDS: *Piper nigrum*, *Nyctanthes arbor-tristis*, Safety and Efficacy, Antipyretic activity.

Synthesis of 2-Substituted Pyrimidines and Evaluation of Its Pharmacological Activities

R Murugan, R Arjunan, M Austin, J Belsen, P Vijin and S Tom.....161

ABSTRACT:

It is the continuation of our search for new substituted pyrimidines based on analgesic, CNS depressant sedative and hypnotic activity. A mixture of acetanilide, aromatic aldehyde in ethanol, NaOH to give (Compound-I) N-phenyl 3-phenyl-2-propenamide. Compound-I on reaction with ethanol, NaOH, urea to give (Compound-II) 6-phenyl amino-4-phenyl-2-hydroxy pyrimidine. The compound-I react with NaOH, thiourea, ethanol to give (Compound-III) 6-phenyl amino 4-phenyl- 2-mercapto pyrimidine. The synthesized compounds were evaluated for their analgesic and depressant activities compared to Diclofenac and Diazepam as positive control. Detailed synthesis, spectroscopic and toxicity data were studied and reported.

KEYWORDS: Pyrimidine Derivatives, Synthesis, Analgesic, Depressant.

Antimicrobial Activity of Methanolic Extracts of *Mucuna pruriens*, *Semecarpus anacardium*, *Anethum graveolens* by Agar Disc Diffusion Method

Sanjay R Patel, Ashok P Suthar, Anand M Shah, Hitesh V Hirpara, Vishal D Joshi and Mayur V Katheria.....165

ABSTRACT:

The investigation is aimed to bring out the antimicrobial actions of the methanol extracts of *Mucuna pruriens* seeds, *Semecarpus anacardium* nuts, *Anethum graveolens* fruits. The antimicrobial activity of the extracts was determined by the agar well diffusion method against various gram positive bacteria, gram negative bacteria. The zone of inhibition of methanolic extract of *Mucuna pruriens* against *Bacillus subtilis* MTTC 121 (24 mm, 22 mm, 17mm, 14 mm, 10 mm), *Staphylococcus aureus* MTCC 96 (20 mm, 16 mm, 13 mm, 10 mm, 8 mm), and *Escherichia coli* MTCC 521 (19 mm, 16 mm, 14 mm, 12 mm, 7 mm) at 10 mg/ml, 5 mg/ml, 2.5 mg/ml, 1 mg/ml, 0.5 mg/ml respectively. The zone of inhibition of methanolic extract of *Semecarpus anacardium* against *Bacillus subtilis* MTTC 121 (11 mm, 9 mm, 8 mm, none, none), *Staphylococcus aureus* MTCC 96 (8 mm, 7 mm, none, none, none), and *Escherichia coli* MTCC 521 (8 mm, none, none, none, none) at 10 mg/ml, 5 mg/ml, 2.5 mg/ml, 1 mg/ml, 0.5 mg/ml respectively. The zone of inhibition of methanolic extract of *Anethum graveolens* against *Bacillus subtilis*

MTTC 121 (24 mm, 21 mm, 16 mm, 12 mm, 8 mm), Staphylococcus aureus MTCC 96 (18 mm, 15 mm, 12 mm, 9 mm, none), and Escherichia coli MTCC 521 (25 mm, 21 mm, 16 mm, 12 mm, 8 mm) at 10 mg/ml, 5 mg/ml, 2.5 mg/ml, 1 mg/ml, 0.5 mg/ml respectively. The results obtained within these study shows that *Mucuna pruriens* extract can be a potential source of natural antimicrobial agent than the nuts of *Semecarpus anacardium*. The fruit of *Anethum graveolens* has linked similar exploit as per *Mucuna pruriens*.

KEYWORDS: Antimicrobial activity, *Mucuna pruriens*, *Semecarpus anacardium*, *Anethum graveolens*, Agar diffusion.

Design and Development of Directly Compressed Sustained Release Matrix Tablets of Aceclofenac

Laxmikant R Zawar, Anjul S Gupta, Pradyumna P Ige and Sanjay B Bari.....168

ABSTRACT:

Introduction: The objective of the present research work was to develop once-daily directly compressed sustained release matrix tablets of aceclofenac, a novel potent analgesic used in treatment of rheumatoid arthritis, alkylosing spondylitis and other acute painful conditions.

Materials and Methods: Sustained release matrix tablets of aceclofenac were prepared by direct compression using xanthan gum, guar gum and hydroxypropyl methylcellulose K4M. Microcrystalline cellulose was used as a diluent and PEG6000 used as drug release modifier. Xanthan gum and guar gum were used as matrix former. Drug and powder blends of all batches were subjected to preformulation, precompression and postcompression studies. Optimized batches of sustained release matrix tablets were subjected to stability studies.

Results and Discussion: The batches C, F3, and T4 showed sustained release of drug for 24 hours with 98.64%, 99.13%, and 95.35% respectively. In vitro dissolution kinetic study of batch C by Korsmeyer- Peppas equation shows regression coefficient, $R^2 = 0.9748$ with release exponent, $n = 2.0996$ that followed super case-II transport mechanism that indicates the polymer relaxation mechanism. The formulation F3 and T4 in Korsmeyer- Peppas equation showed good linearity ($R^2 = 0.9887, 0.9728$), with slope ($n = 0.7205, 0.8635$) respectively that appears to indicate the drug release mechanism is anomalous transport, which indicates both drug diffusion and polymer relaxation mechanism. It might be due to the poor aqueous solubility of aceclofenac. The Hixson-Crowell equation for C, F3 and T4 showed $R^2=0.9559, 0.9503$ and 0.9024 respectively. No changes were observed in results of stability studies.

Conclusion: It is concluded that the batches C, F3 and T4 would release the entire quantity of the drug at the end of 24 hour and it can be used for the formulation of once daily sustained release matrix tablet of aceclofenac. This prolonged release of drug might be beneficial and effective for reliving pains of rheumatoid arthritis and alkylosing spondylitis.

KEYWORDS: Aceclofenac, Xanthan Gum, Guar Gum, HPMC K4M, Sustained Release Tablet

The Effect of Various Superdisintegrating Agents on Mouth Dissolving Tablet of Ranitidine HCl

Dholakiya RB, Akbari BV, Shiyani BG, Patel GF, Ramani GK and Vekariya NR.....175

ABSTRACT:

As patient with acute Acidity and ulcer have markedly reduced functional ability and are extremely restless. In such cases rapid onset of action is of prime importance, so the patient would be benefited by using proposed drug delivery system which may help them to return to normal state and resume their functional activity quickly assuming rapid and increased pregastric absorption. In the present work, The Mouth dissolving tablets (MDT) of Ranitidine were prepared by Direct compression using Kollidon, L-HPMC and L-HPC in different concentration like 10%, 15% and 20% and evaluated for hardness, friability, disintegration time and in-vitro dissolution study. The results indicate that MDT containing L-HPC in 20% showed desired drug release profile (> 99% in 4min) and gives the disintegration in 40 sec and release rate of these variation of super disintegrating agents is found in manner; L-HPC> Kollidon > L-HPMC in proportion 10<15<20.

KEYWORDS: Ranitidine HCl, L-HPC, Kollidon, L-HPMC, Mouth dissolving tablet.

An Ion-Pair Chromatography Method for Simultaneous Estimation of Tramadol and Paracetamol in Combined Tablet Dosage Form

Jane Fatima Mary Titus, A Thenmozhi, And D Sridharan.....179

ABSTRACT:

A simple, fast, and new ion pair chromatographic method was developed and validated, for the simultaneous estimation of Tramadol hydrochloride and paracetamol in pharmaceutical formulations. The developed method uses acetonitrile: 5% sodium lauryl sulphate: methanol in the ratio of 45:15:40 v/v with flow rate of 1mL /minute. The optimum separation was achieved in less than 5 minutes using WATERS Symmetry C₁₈ column (250mm X 4.6mm, 5µm, i.d.) detection was carried out using UV detector, measuring the response at 217nm. Beer's law was obeyed in the concentration range of 20-187.5µg/mL for tramadol and 20-1625 µg/mL for paracetamol, with a detection limit of 4ng/mL for tramadol and 5ng/mL for paracetamol, and a quantitation limit of 15ng/mL for tramadol and 16ng/mL for paracetamol. Intra-day and Inter-day precision and accuracy of the methods have been established according to the current ICH guidelines. The regression co-efficient (r²) value for tramadol and paracetamol was found to be 0.9998 and 0.9996 respectively. The average recovery for tramadol was 100.03% and 100.28% for paracetamol. No interferences were observed from the excipients. The proposed method was found to be accurate, precise and rapid for the simultaneous estimation of tramadol and paracetamol.

KEYWORDS: Tramadol, Paracetamol, HPLC, simultaneous, ion pairing.

Anti-Inflammatory Activity of *Abutilon indicum* Linn. Leaf

DK Golwala, LD Patel, SB Bothara, SK Vaidya , AR Sahu and S Kumar.....183

ABSTRACT:

The present study reveal that the ethanolic and aqueous extracts of *Abutilon indicum* Leaf using two different doses of each extract in acute (Carrageenin induced hind paw edema) and subacute (Formaldehyde induced hind paw edema) inflammation induced in rats, p.o. administration. In acute inflammation the % protection AIE 300 mg/kg - 64.04 % and 100 mg/kg - 59.55%, while AIA 300 mg/kg - 46.66 % and 100 mg/kg - 32.88 %. In Subacute inflammation the % protection in 3rd h are AIE 300 mg/kg - 86 % and 100 mg/kg - 68 %, while AIA 300 mg/kg - 68 % and 100 mg/kg - 44 %.The % protection of both the extracts shows *Abutilon indicum* possess potent anti-inflammatory activity and it significantly reduces inflammation.

KEYWORDS: *Abutilon indicum*, Anti-inflammatory, carrageenin and formaldehyde-induced edema.

Assessment of Hypolipidemic Potential of *Chenopodium Album* Linn on Triton Induced Hyperlipidemic Rats

Priya Singh, Yogesh Shiv hare and UK Patil.....187

ABSTRACT

Hyperlipidemia, including hypercholesterolemia and hypertriglyceridemia, is a major risk factor for the development of cardiovascular diseases. The search for new drugs able to reduce and or to regulate serum cholesterol and triacylglycerol levels has gained importance over the years, resulting in numerous reports on significant activities of natural agents. In this study we assessed the hypolipidemic potential of *Chenopodium album* Linn (Chenopodiaceae) on triton induced hyperlipidemic rats. Experimental rats were divided into six groups of five rats each: Normal control group (NCG), Hyperlipidemic control group (HCG), Hyperlipidemic group (HG), methanolic extract treated group (HGCaM), aqueous soluble treated group (HGCaAS) and aqueous insoluble treated group (HGCaAIS). The treatment was continued for 5 days with a view to see the effect of drug after 12h, 24h, 72h and 120h on lipid profile such as total cholesterol, plasma triglycerides, HDL-cholesterol and LDL etc. Methanolic extract and its fraction have significantly decreases the lipid parameter such as total cholesterol, plasma triglycerides, LDL- Cholesterol, Atherosclerosis Index (AI) etc. The results suggest the consumption of *Chenopodium album* Linn can be linked to a reduction in the risk of cardiovascular diseases.

KEYWORDS: *Chenopodium album* Linn, Hypolipidemic activity, Atherogenic index

Design and Study on Effect of Hydrophilic Polymers on Release Rate of Baclofen Sr Matrix Tablet

Akbari B.V, Dholakiya R.B, Shiyani B.G, Lodhiya D.J.....193

ABSTRACT

The present investigation an attempt has been made to increase therapeutic efficacy, reduce frequency of administration and improve patient compliance, by developing sustained release matrix tablet of baclofen. Sustained release matrix tablet of baclofen, were developed by using different drug: polymer ratio. HPMC K4M, HPMC K100M and Xanthan gum was used as matrix former. All lubricated formulations were compressed using 9mm punch. Compressed tablets were evaluated for uniformity of weight, content of active ingredient, friability, hardness, thickness, in vitro dissolution using basket method, and swelling index. All the formulation showed compliance with pharmacopoeias standards.

Among the different formulation, B7 showed sustained release of drug for 12 hours with 97.46 % release. The selected formulation (B7) was subjected to stability studies for one month at room temperature, 2-8 °c and 40°c with RH 75±5%, and showed stability with respect to release pattern. The kinetic model fitted showed that the release of drug follows zero order kinetics ($R^2=0.9914$). korsmeyer- peppas equation gave value of $n=0.78$ which was close to one, indicating that drug was released by non-fickian release mechanism. Thus, combination of HPMC K4M and K100M were found to be effective in retarding the release of baclofen.

KEYWORDS: Baclofen, HPMC K4M, HPMCK100M, Xanthan gum, SR matrix tablets.

Dissolution Enhancement of Clarithromycin by Formation of Surfactant Containing Microparticles

MS Gambhire, VM Gambhire and K Maske.....199

ABSTRACT:

The slow dissolution rate exhibited by poorly water-soluble drugs is a major challenge in the development process. Following oral administration, drugs with slow dissolution rates generally show erratic and incomplete absorption, which may lead to therapeutic failure. The aim of this study was to improve dissolution rate. Microparticles containing the model drug (clarithromycin) were produced by spray drying the drug in the presence of a surfactant. Poloxamer 407 was chosen as the surfactant to improve particle wetting and therefore the dissolution rate. The spray-dried particles were characterized and in vitro studies were carried out. The result obtained shows that dissolution rate of spray-dried clarithromycin and Poloxamer 407 particles were increased. Clarithromycin is water insoluble drug, after formulation of microparticles solubility is increased.

KEYWORDS: Clarithromycin; Microparticles; Poor solubility; Spray drying.

Estimation of Eszopiclone in Bulk and in Formulation by Simple UV and Difference Spectroscopic Methods

K Anandakumar, G Kumaraswamy, T Ayyappan, ASK Sankar and D Nagavalli.....202

ABSTRACT:

Two simple efficient, precise and accurate simple UV and difference spectroscopic methods have been developed for the estimation of Eszopiclone in bulk and in pharmaceutical dosage form. In method A, UV Spectra of Eszopiclone in 0.1M Hydrochloric acid exhibits the absorption maximum 304 nm. Method B is based on the measurement of difference in absorbance of Eszopiclone at maxima 307 nm and minima at 239 nm. The measured value is the amplitude of maxima minima between two equimolar concentrations of the analyte in different chemical forms, which exhibits different spectral characteristics. Beers law limit the concentration range of 3-18 µg/ ml for method A, and method B, for 2-12 µg/ ml. The accuracy of the method was determined by recovery studies. The methods were validated statistically. The methods showed good reproducibility and recovery with % RSD less than 2. The methods were found to be simple, economical, accurate and reproducible and can be used for routine analysis of Eszopiclone in bulk drug and in formulation.

KEYWORDS: Eszopiclone, Simple UV method, Difference Spectroscopic method and Method Validation.

Aceclofenac Extended Release Matrix Tablets: Formulation and In Vitro Evaluation

Suman Katteboina and VSR Chandrasekhar P.....206

ABSTRACT:

The objective of the present study was to develop once-daily extended-release matrix tablets of aceclofenac, a non-steroidal anti-inflammatory drug (NSAID) has been indicated for various painful indications, and proved as effective as other NSAIDs with lower indications of gastro-intestinal adverse effects and thus, resulted in a greater compliance with treatment. Natural polymer, xanthan gum was used as matrix former, microcrystalline cellulose (Avicel PH101), dibasic calcium phosphate (DCP) were used as diluents. The matrix tablets were prepared by direct compression, and were subjected to physical characterization and in vitro release studies. The in vitro drug release was carried out using USP apparatus 2 at 100 rpm in 900 ml of 2% SLS acidic dissolution medium (pH 1.2) for 2 hrs, followed by 900 ml alkaline dissolution medium (pH 6.8) for 3-24 hrs. Formulation was optimised on the basis of acceptable tablet properties and in vitro drug release. The results of dissolution studies indicated that formulation F-II (drug to polymer (1:0.3), the most success of the study, exhibited drug release pattern very close to the marketed extended release profile. By applying exponential equation, optimised formula followed korsmeyer-peppas model with non-Fickian anomalous transport mechanism.

KEYWORDS: Aceclofenac, xanthan gum, matrix tablets, extended release, direct compression

Pharmacognostical Studies on Flower Parts of *Nymphaeae pubescens*

S Thyagarajan, C Sasikala, R Venkatalakshmi, B Sudhakar and K Suresh.....210

ABSTRACT:

Nymphaeae pubescens willd, belonging to the family Nymphaeaceae reveals the presence of phytochemical molecules such as alkaloids, carbohydrates, glycosides, phytosterols, tannin and phenolic compound. The flower has been used traditionally for the treatment of astringent, cardiac tonic. As there is no pharmacognostic work on record on the flower part, the macroscopic and microscopic characters are describe and illustrated along with physiochemical constants, preliminary phytochemical and fluorescence analysis. Powder microscopic feature and the behaviour of the powder with different chemical reagent are also reported.

KEYWORDS: *Nymphaeae pubescens*, Nymphaeaceae, Pharmacognosy

Absorbance Correction and Vierodt's Spectrophotometric Methods for the Simultaneous Determination of Ofloxacin and Nitazoxanide in Combined Tablet Dosage Form

MD Game, DM Sakarkar, KB Gabhane, KK Tapar and UA Deokate.....214

ABSTRACT

Two simple, accurate, precise, rapid and economical methods were developed for the simultaneous estimation of Nitazoxanide and Ofloxacin in tablet dosage form. First method is Vierodt's method (Method A), where the wavelengths selected for quantitation were 295nm (λ_{max} of Ofloxacin) and 347 nm (λ_{max} of Nitazoxanide). Second method is absorbance correction method (Method B), it is based on correcting the absorbance of the component of interest from the total absorbance of the sample and the wavelengths used for estimation of both drugs were 295 nm and 380 nm. Both the methods were validated statistically and recovery studies were carried out. Both drugs show linearity in the concentration range of 2 – 30 $\mu\text{g/ml}$. Linearity of Nitazoxanide and Ofloxacin were in the range of $\pm 20\%$ of the test concentration. The proposed methods have been applied successfully to the analysis of the cited drugs in pharmaceutical formulations with good accuracy and precision. The methods herein described can be employed for quality control and routine analysis of drugs in pharmaceutical formulations.

KEYWORDS: Nitazoxanide, Ofloxacin, UV Spectrophotometry, Absorbance Correction method, Vierodt's method

Phytochemical Investigation of Root Extract of the Plant *Carissa carandas* Linn

Karunakar Hegde and Arun B Joshi.....217

ABSTRACT:

From the petroleum ether extract of the roots of *Carissa carandas* Linn. (Apocynaceae), three compounds namely lupeol, β -sitosterol, 16 β -hydroxybetulinic acid and from the chloroform extract two compounds namely α -amyrin

and β -sitosterol glycoside have been isolated by column chromatography. Their structures were characterized by m.p., IR, ^1H NMR, ^{13}C NMR and MS spectral data. However, the compounds lupeol, 16 β -hydroxybetulinic acid and α -amyrin were reported for the first time from the roots of this plant.

KEYWORDS: *Carissa carandas*, Root extract, Steroidal glycoside, Triterpenoids

Stability Indicating RP-HPLC Method for Analysis of Ciprofloxacin in Tablet Dosage Form

Bhupendra Shrestha, Hema Basnett, Sita Sharan Patel, Rashmi Karki, Shivani Agarwal, R. Mazumder and B. Stephenrathinaraj.....221

ABSTRACT:

A simple, sensitive, accurate, reproducible and stability indicating RP-HPLC method was developed for the rapid analysis of Ciprofloxacin in tablet dosage form. The chromatographic separation was performed on a RP C18 (250 x 4.6 i.d) mm, 5 μm , column. The mobile phase of the method consists of equal amount of acetonitrile and methanol along with 1% acetic acid in aqueous solution in the ratio of 8:8:84 v/v in the flow rate of 1.5 mL/min. The retention time for ciprofloxacin is found to be 7.7min when monitored at 280 nm. The detector response was linear in the concentration range of 200-700 $\mu\text{g/mL}$. The limit of detection and limit of quantification was 15.145 and 44.784 $\mu\text{g/mL}$ respectively. The percentage assay of Ciprofloxacin was 99.92%. Correlation coefficient (r) of the regression equation is more than 0.999. The precision of the method was established by intra and inter day assay values which were less than 1%. None of the degraded products interfered with the Ciprofloxacin peak thus ensuring stability indicating nature of the method.

KEYWORDS: Ciprofloxacin, Stability Indicating, RP-HPLC

Assessment of Effect of Olanzapine Vs Risperidone among Patients with Schizophrenia In Terms Of Personality Changes

Kingston R, Elizabeth Mathew and Shivakumar Swamy.....224

ABSTRACT

The antipsychotics have an elegant role in treating the schizophrenic patients,. Along with the non-pharmacological treatment .The success rates with newly diagnosed patients were better when drugs are used to reduce the risk of developing chronic conditions. The aim of this study is to assess the efficacy of olanzapine and risperidone among patients with schizophrenia. An assessment was made in newly diagnosed patients with schizophrenia to study the effect of olanzapine and risperidone prescribed to them and their personality changes. The study was conducted for 100 patients over a period of 6 months. Patients were divided into two groups and treated with olanzapine and risperidone . There was a significant difference in both the therapy, with the mean differences in both the groups. Statistically significantly greater proportion of the olanzapine-treated than risperidone-treated patients maintained their response. Both the drugs prescribed significantly improved the health condition of schizpohrenic patients. In individual drug therapy olanzapine is considered as the drug that has more efficacies with respect to the mean values. Though the personality change of the patients shows significant improvement, it can be improved much more through patient awareness programs and patient education.

Study of Effect of Solubility of Drug on the Release Behaviour from Buccal Films of a Hydrophilic Polymer

Sarojini S, R Manavalan and Sowmya Priyadarsini.....227

ABSTRACT:

The objective of the present work is to compare the solubility profile of a water soluble drug and a water insoluble drug and thereby study their release behavior from a buccal film containing the same hydrophilic polymer HPMC in association with PEG400. The two drugs selected for the study are diclofenac sodium which is sparingly water soluble and ibuprofen which is water insoluble. The drug's solubility profile from the formulation into buccal mucosa for absorption was studied. The films exhibited satisfactory physical and mechanical properties like patch thickness in mm, folding endurance, percentage increase in weight, surface p^{H} , percentage swellability. Diffusion study indicates that release can be sustained for a period of upto 3-6 hours. This study concludes that mucoadhesive patches can be used as a promising novel drug delivery system by considering drug solubility profile as a major criteria in drug designing.

Simultaneous Estimation of Rabepazole Sodium and Domperidone Maleate in Bulk and Tablet Dosage Form by Reverse Phase High Performance Liquid Chromatography

Jawed Akhtar, B Srivastava, SS Sukla, Rajeev Chaturvedi and Uttam Singh Baghel.....231

ABSTRACT:

A selective and sensitive reverse phase high performance liquid chromatography (RP-HPLC) method has been developed for the separation and quantification of rabepazole sodium and domperidone maleate in tablet dosages form has been fist developed and validated. Quantification carried out using HIQ Sil C₁₈ column (25cm x 4.6mm i.d.) as a stationary phase and mobile phase comprised of 50mM KH₂PO₄ and acetonitrile in proportion of 60:40 (v/v) with pH adjusted to 7 ±1 by using 5M potassium hydroxide. The flow rate was 1.0 ml/min and monitored at 285 nm. The retention time for rabepazole and domperidone were 6.707 and 8.002 min, respectively. The method was validated in terms of linearity, precision, accuracy, ruggedness, and specificity, limit of detection and limit of quantification. The linearity (r²) and percentage recoveries of rabepazole and domperidone were 0.9986 and 100.02µg/ml and 0.9992 and 99.98 % respectively. The proposed method is suitable for simultaneous determination of rabepazole and domperidone in tablet dosages form.

KEYWORDS: RP-HPLC; Rabepazole sodium; Domperidone maleate; simultaneous determination.

Development of Time Programmed Pulsincap System for Chronotherapeutic Delivery of Diclofenac Sodium

Harshitha R, Pavan Kumar Potturi, Ramesh R, RajKumar N, Nagaraja G and Murthy PNVN.....234

ABSTRACT:

The objective of this study was to develop and evaluate a time or site specific pulsatile drug delivery system. The basic design consists of an insoluble hard gelatin capsule body, filled with eudragit microcapsules of Diclofenac sodium and sealed with a hydrogel plug. The entire capsule was enteric coated, so that the variability in gastric emptying time can be overcome and a colon-specific release can be achieved. The diclofenac microcapsules were prepared in four batches, with Eudragit RS-100 by varying drug to polymer ratio and evaluated for the particle size, drug content and *in vitro* release profile and from the obtained results; one better formulation was selected for further fabrication of Pulsatile capsule. Different grades of HPMC hydrogel polymer were used as plugs, to maintain a suitable lag period and it was found that the drug release was controlled by the proportion of polymers used. The entire capsule was enteric coated by using eudragit L-100, so that colon specific release can be achieved. *In-vitro* release studies of pulsincap system revealed that colon specific release has been achieved, increasing the hydrophilic polymer content resulted in delayed release of diclofenac sodium from microcapsule.

KEYWORDS: Pulsatile; Colon-specific; Eudragit microcapsules;

Development and Validation of a Stability-Indicating HPTLC Method for Analysis of Bumetanide in the Bulk Drug and Tablet Dosage Form

Mohan Kumar, Janhavi R Rao , Savita S Yadav, Sathiyarayanan L, Vikas.....239

ABSTRACT:

A simple, selective, precise and stability-indicating high-performance thin layer chromatographic method for analysis of bumetanide (BUM), both as the bulk drug and in a tablet formulation, has been developed and validated. Aluminium foil TLC plates precoated with silica gel 60F254 were used as stationary phase and toluene: ethyl acetate: formic acid (7: 3.5: 0.5, v/v/v) as mobile phase. A compact band (R_F 0.45 ± 0.02) was obtained for BUM. Densitometric analysis was performed in absorbance mode at 335 nm. Linear regression analysis revealed a good linear relationship (r² = 0.9996) between peak area and concentration in the range 100-800 ng/spot. The mean values ± RSD of the slope and intercept were 0.9987 ± 0.965 and 23.471 ± 1.24, respectively. The method was validated for precision, recovery, and robustness. The limits of detection and quantitation were 30 and 80 ng/spot, respectively. BUM was subjected to acid and alkaline hydrolysis, oxidation, and photochemical and thermal degradation and underwent degradation under all these conditions. Statistical analysis proved the method enables repeatable, selective, and accurate analysis of the drug. It can be used for identification and quantitative analysis of BUM in the bulk drug and in tablet formulations.

KEYWORDS: Bumetanide, HPTLC, Validation and Stability indicating

Phytochemical Investigation and Pharmacological Screening of *Alianthus excelsa* Linn. Leaves as Anthelmintic activity in Earthworm.

Sutar NG, Giri MA, Kendre PN, Syed NL and Singh J.....244

ABSTRACT:

Alianthus excelsa Linn. have antimicrobial, anti-inflammatory, analgesic, antipyretic, activity, use in treatment of arthritis as antiirilityetc. Methanolic extract of leaves of *Alianthus excelsa* Linn reported as analgesic but anti inflammatory activity is till not reported, the effect of alcoholic, Petroleum ether, Ethyl acetate, Diethyl ether and n-Butanol extracts were tested for its phytochemical constituents which contain glycosides, flavonoids, tannins, amino acids. As anti inflammatory activity is done by using carrageen induce rat paw odema and compare with Diclofenac Sodium as a standard in a dose of [15mg/kg] for anti inflammatory effect.

KEYWORDS: *Alianthus excelsa* Linn, Anthelmintic activity, Albendazole.

Simultaneous Estimation of Aceclofenac and Paracetamol in Solid Dosage Form by UV Spectrophotometry

Deepali Gharge, Chandrakant Raut and Pandurang Dhabale.....247

ABSTRACT:

Aceclofenac is a non steroidal anti-inflammatory drug and paracetamol is an analgesic and antipyretic drug. Simple, precise, rapid and selective simultaneous equation and Q- analysis UV spectrophotometric methods have been developed for the simultaneous determination of aceclofenac and paracetamol from combined tablet dosage forms. The methods involve solving of simultaneous equations and Q-value analysis based on measurement absorptivity at 274nm, 267.5nm and 245 nm respectively. The method shows good linearity, accuracy and reproducibility. Results of analysis validated statistically and by recovery studies.

KEYWORDS: Aceclofenac, Paracetamol, Simultaneous equation method, Absorbance ratio method.

Simultaneous Determination of Cefuroxime Axetil and Potassium Clavulanate in Tablet Dosage Form by Spectrophotometry

Mahima R Sengar, Santosh V Gandhi, Vivek Rajmane, Upasana P Patil and Bhargav B Gandhi.....251

ABSTRACT:

Two accurate, precise, sensitive and economical procedures for simultaneous estimation of Cefuroxime Axetil and Potassium clavulanate in tablet dosage form have been developed. The methods employed were Absorbance correction method (I) and first order derivative spectroscopic method (II). The first method employs wavelength 277 nm for direct estimation of Cefuroxime axetil where Potassium clavulanate shows nil absorbance. Estimation of Potassium clavulanate is carried out after correction for absorbance of Cefuroxime axetil at 218 nm. The second method is based on first order derivative spectroscopy. Wavelengths 230 nm and 300 nm were selected for the estimation of the Potassium clavulanate and Cefuroxime axetil respectively. Both the drugs obey Beer's law in the concentration range 5-50 mcg/mL. The results of analysis have been validated statistically and by recovery studies.

KEYWORDS: Cefuroxime axetil, Potassium clavulanate, Absorbance correction method, First order derivative spectroscopic method.

Design and Evaluation of Binding Properties of *Cassia roxburghii* Seed Galacto mannan and *Moringa oleifera* Gum in the Formulation of Paracetamol Tablets

MR Shivalingam, KSG Arul Kumaran , D Jeslin, KV Ch Madhusudhan Rao and M Tejaswini.....254

ABSTRACT:

Plant gums and mucilage widely have been used in Pharmaceuticals and in other various industries due to their abundance in nature and low cost. In view of importance of binders in pharmaceuticals for the manufacture of tablets and capsules, gum isolated from the seeds of *Cassia roxburghii* Linn, and the stem of *Moringa oleifera* has been evaluated for their binding properties in the formulation of Paracetamol tablet containing 2%, 4% and 6% binding concentration. The binding properties of both gums were evaluated in relation to conventional binder like guar gum, gelatin, Sod.CMC at different parameter like percentage of fines, tablet hardness, disintegration time,

dissolution and friability and found that 2% binding concentration of both gum shows superior binding properties when compared to the other binders. Increase in concentration of filtered and defatted *C. roxburghii* gum, *M. oleifera* gum from 2% to 6%; decrease the percentage of fine, increase the hardness, increase the disintegration time, decrease the percentage of friability and decrease % cumulative release. Hence Paracetamol tablets were formulated using combination of (1% *C.rox*+1%*M.oleifera*) binding concentration and evaluated. The binder-excipients interaction study was also carried out by using FTIR i.e. by KBr pellet method which showed that *C. Roxburghii* gum, *M.oleifera* gum is compatible with drug and all excipients in the formulation. Results indicates that Paracetamol tablets prepared with 2 % (1% *C. roxburghii* + 1% *M. oleifera*) of mucilage were found to be ideal for the preparation of uncoated tablet formulation when high mechanical strength is more essential. Hence these gums shows better tableting characteristics have high potentials for the substitution for more expensive binders.

KEYWORDS: *Cassia roxburghii*, *Moringa oleifera*, Binding concentration, Conventional binders.

In-Vitro and In-Vivo Correlation of Marketed Formulation of Nimesulide

Kuldeep Malodia, Sunil Kumar, Pankaj Rakha, SK Singh and DN Mishra.....257

ABSTRACT

In vitro Dissolution is an important Quality control tool, provided it is based on a meaningful in vitro- invivo correlation (IVIVC). Such Dissolution test can prove as a surrogate to extensive, expensive and time consuming invivo bioavailability testing on human. In the present study we had made an attempt to establish in vitro data protocol for in vivo performance of the drug. In order to established IVIVC we selected formulation of nimesulide i.e. nimesulide plain 100 mg for accurate use of data from both the fasted and fed state IVIVC.

KEYWORDS: IVIVC, nimesulide, Dissolution

Validated Spectroscopic Method for Estimation of Tramadol Hydrochloride from Tablet Formulation

Deepali Gharge, Kundan Pawar, Pallavi Salve and Pandurang Dhabale.....260

ABSTRACT:

Tramadol hydrochloride is a centrally acting analgesic, used for treating moderate to severe pain. Various methods for analysis of the same are available but are time consuming and expensive. Here we have developed a new, precise and simple UV spectrophotometric method for estimation of tramadol hydrochloride from tablet formulation. The drug obeyed the Beer's law and showed good correlation. Absorption maxima of tramadol hydrochloride in methanol diluted with distilled water was found to be at 270.5nm. Beer's law was obeyed in concentration range 0 – 20 mcg/ml. The results of analysis were validated by recovery studies. The recovery was more than 99%. The method was found to be simple, accurate, precise, economical and robust.

KEYWORDS: Tramadol hydrochloride, UV spectrophotometry, Recovery study.

Formulation and Optimization of Directly Compressible Ambroxol HCl Controlled Release Matrix Tablets

Katteboina Suman, Rama Krishna Raparla, Talasila Eswara and Gopala Krishna Murthy.....263

ABSTRACT:

The purpose of this study was to develop controlled release matrix tablets of Ambroxol HCl (hydrochloride) using xanthan gum. The matrix tablets were prepared by direct compression, were subjected to physical characterization and in vitro release studies. The in vitro drug release studies were carried out using USP apparatus 2 at 100 rpm in 900 ml of acidic dissolution medium (pH 1.2) for 2 h, followed by 900 ml alkaline dissolution medium (pH 6.8). Formulation was optimised on the basis of acceptable tablet properties and in vitro drug release. The results of dissolution studies indicated that formulation F-II (drug to polymer 1:0.5), the most success of the study, exhibited drug release pattern very close to the marketed sustained release profile. By applying exponential equation, optimised formula followed korsmeyer-peppas model with non Fickian anomalous transport mechanism.

KEYWORDS: Ambroxol HCl, Hydrophilic matrix tablets, Controlled release, Xanthan gum, Direct compression

Formulation and Development of Sustained Release Microspheres of Metformin Hydrochloride

Parag N Bhangale, Hitendra S Mahajan and Rajendra D Wagh.....267

ABSTRACT:

Metformin hydrochloride microspheres were prepared by non-aqueous emulsification solvent evaporation method, using hydrophobic polymer i.e. ethyl cellulose and hydroxy propyl methyl cellulose K15M. Spherical microspheres having an entrapment efficiency of 80% - 87% and percentage yield of 71% - 90% were obtained. The effect of polymer-drug ratio, stirring speed was evaluated with respect to entrapment efficiency 80% -87% and percent yield 71% - 90% was obtained. The effect of polymer- drug ratio, stirring speed was evaluated with respect to entrapment efficiency, percentage yield and in vitro drug release behavior. Visual inspection and infrared spectroscopic analysis confirmed the absence of drug-polymer interaction. Te in vitro release profile could be altered significantly by changing the drug to polymers ratio to give sustained release of drug from microspheres. The F2 factor was found to 74 % compared with marketed sample. The optimized formulation M8 was kept for stability study at refrigeration temperature, room temperature and at oven temperature (40o C to 45o C) showed no significant drug interaction.

KEYWORDS:

Antidiabetic Effect of an Aqueous Extract of Pomegranate (*Punica granatum L.*) Peels in Normal and Alloxan Diabetic Rats

Punasiya R, Joshi A and Patidar K.....272

ABSTRACT:

Hypoglycaemic drugs are either too expensive or have undesirable side effects including hematological, coma and disturbances of liver and kidney. Limiting of diabetes without any side effects is still a challenge to the medical system. This leads to exert effort to search for effective, safer and less cost antidiabetic plants. This investigation aims to evaluate the role of *Punica granatum* powder peels extract in its human therapeutic dose on beta cell number, blood glucose and plasma insulin levels in normal and alloxan diabetic rats for 4-weeks of treatment. The treatment revealed that pomegranate aqueous extract significant decreased blood glucose and increased insulin levels in normal and diabetic treated rats. Pancreas showed increased number of beta cells in normal and treated diabetic rats. In conclusion pomegranate peel aqueous extract can reduce blood sugar through regeneration of β cells.

KEYWORDS: *Punica granatum*, Antidiabetic plants, Extract, Hypoglycaemic effect.

Phase Transfer Catalytic Synthesis of Aromatic Aldehydes

Shahare HV, Bhojar PK, Dhabarde DM, Jadhav SP and Pawar GM.....275

ABSTRACT:

As the chemical industry strives to improve process efficiency, safety and reduce environmental impact, phase transfer catalysis (PTC) has been recognized a useful tool in organic synthesis. Phase transfer catalysis offers a number of advantages over the conventional processes. A simple oxidation method is developed for aromatic aldehydes synthesis from alkyl aromatics in good yields by using phase transfer catalyst.

KEYWORDS: Aromatic aldehydes, Phase transfer catalyst, Sodium bromate, Oxidation.

Design, Development and Evaluation of Extended Release Multiunit Particulate System of Novel Class-I Antidepressant Drug.

Margret Chandira, Mehul, BS Venkateshwarlu, Chiranjib, Debjit and B Jayakar.....277

ABSTRACT:

Pellets have long been employed to improve the bioavailability of drugs undergoing significant first pass hepatic metabolism. Drug is an antidepressant drug. It has very strong side effect of vomiting in the dosage form, so it is necessary to developed its Sustain Release dosage form to avoiding this side effect. Chances of dose dumping were very negligible in the multiunit particulate system drug delivery system. It was under goes extensive first pass metabolism resulting in an oral bioavailability of 45 % and it shows variable absorption from GIT. Multiunit particulate

oral drug delivery system offers several advantages such as rapid absorption, reducing peak plasma fluctuation and ease of administration and termination of therapy. Hence in the present work pellets of drug were prepared with the objective of avoiding first pass metabolism and controlling the release of drug for prolog period of time. Extended released pellets containing drug was prepared using an extrusion-spheronization technique. Amount of Microcrystalline cellulose (Avicel pH101), HPMC 15 cps and Eudragit NE 30D were taken as the formulation variables for optimizing to keep round shape of pellets and percentage release of drug. The pellets were evaluated for Physical characterization, Assay, Sizing, SEM, In-vitro drug release and Binder's concentration tends to very effective pellets shape and size. Percentage release of drug tended to very non-linear with polymer type and percentage of coating on the pellets. The formulation with 0.45% HPMC, 65.94% MCC and 13% Eudragit NE 30D coating was consider as a best product with respect to perfect size and shaped pellets and In-vitro drug release study. Multiunit particulate drug delivery system gives unique release pattern, which was seen in F9I formula. This product was further subjected to stability study, the results of which indicated no significant change with respect to Shape, color, surface and in vitro drug release.

KEYWORDS: Extended released pellets, Multiunit particulate oral drug delivery system, antidepressant drug, in vitro drug release.

Short Communication

In vitro Anthelmintic Activity of *Nymphacea stellata* Willd

Shibnarayan Acharya, Digbijay Kumar, Sit Ranjan Sahu, Saswat Kumar Parida and Satyajit.....287

ABSTRACT

Different extracts of thalamus of *Nymphacea stellata* willd., were evaluated for their anthelmintic activity on adult Indian earthworms, *Pheretima posthuma*, the chloroform and ethanol extract of the plant shows significant activity. The activities are comparable with the reference drug Albendazole and Piperazine citrate.

KEYWORDS: *Nymphacea stellata*, Anthelmintic activity, chloroform extract, ethanol extract, Albendazole, Piperazine citrate

Diuretic Activity of *Cinnamomum tamala* Leaves

Aravind V. Bendre, Manoj S. Tare, Hemant V. Kamble, Anujah N. Patil and Kishan G. Bhalodia.....289

ABSTRACT:

The decoction of the leaves of *Cinnamomum tamala* of family Lauraceae widely used in the field of medicine for the treatment of vitiated conditions of vata, diarrhea, proctitis, proctalgia. Preliminary phytochemical investigation of alcoholic and water extracts of the leaves of *Cinnamomum tamala* showed the presence of flavonoids, sterols, tannins and glycosides.

The aqueous and ethanolic extracts of *Cinnamomum tamala* leaves were investigated for its diuretic activity tested in albino rats. Results revealed that both the alcoholic and aqueous extracts showed significant diuretic activity at a dose of 500mg/kg body weight by increasing the total volume of urine and concentrations of potassium and sodium salts in urine as compared to the standard drug frusemide.

KEYWORDS: *Cinnamomum tamala*, diuretic, frusemide, albino rats.

Preliminary Evaluation of Hibiscus Stem Mucilage as Suspending Agent

Mohini Upadhye, Deepmala Wagh and Uttara Joshi.....289

ABSTRACT:

Mucilage is a glycoprotein, an exopolysaccharide, a polymer produced by most of the plants and some micro-organisms. It occurs in various parts of nearly all classes of plant usually in relatively small percentage and is frequently associated with other substance such as tannins and alkaloids.

In recent years, plant gums and mucilages have evoked tremendous interest due to their diverse application in pharmacy in the formulation of both solid and liquid dosage forms

The present study was undertaken to evaluate the mucilage obtained from the stems of *Hibiscus rosa sinensis* Linn. as a suspending agent. A suspension of CaCO₃ was prepared using 2 % w/v of hibiscus mucilage as suspending agent and it is evaluated for its stability using the parameters like sedimentation volume, viscosity, redispersibility and pH. The suspending agent of Hibiscus mucilage was compared with CaCO₃ suspensions prepared using 2 % w/v of suspending agents such as acacia and tragacanth. The study has revealed that Hibiscus mucilage can be a potential candidate as a suspending agent and can be used for conventional tablet formulation.

KEYWORDS: Hibiscus, mucilage, suspending agent

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