

CONTENT

REVIEW ARTICLE

Pharmacological and Phytochemical Profile of *Chenopodium album* linn

Priya Singh, Yogesh Shivhare, A.K Singhai and Abhishek Sharma.....960

ABSTRACT:

This review comprises history, morphology, phytoconstituents, pharmacognostical & pharmacological aspects, ecological factors, impact on ecological system and its biology and invasive potential of the plant. Major class of phytoconstituents includes Non Polar lipid, phenols and lignins, alkaloids, flavonoids, glycosides and saponins. The plant has been traditionally used as a laxative, anthelmintic against round and hookworms, blood-purifier, antiscorbutic. Pharmacologically studies have revealed that the plant has been exhaustively explored for its anthelmintic, sperm immobilizing and contraceptive action, antipruritic and antinociceptive action. Therefore *Chenopodium album* (*C.album*) holds a great potential for in depth biological evaluation. Even, no work has ever been carried out for standardizing this potentially useful plant. Significance of standardization and future scope of *C. album* has been discussed in this review.

KEYWORDS: *Chenopodium album*, anthelmintic, Flavonoids.

Transdermal Immunization: A Recent Tool for Immunization

Dinesh Mishra, Anuja Mishra, Vaibhav Dubey and Karunakar Shukla.....964

ABSTRACT:

Vaccination is one of the most powerful tools available in the ongoing battle against infectious agents. Virtually all recommended immunizations require parenteral administration, and many require a series of injections, therefore, new vaccine delivery methods, specifically alternatives to injections, are being sought. Transdermal immunization (TI) offers a new method for the delivery of vaccines, that relies on the application of antigen with adjuvant onto the outer layer of the skin and subsequent delivery to underlying Langerhans cells that serve as antigen-presenting cells. TI is a needle-free method of vaccine delivery that, will decrease the risk of needle-borne diseases, improve access to vaccination by eliminating the need for trained personnel and sterile equipment, and possibly provide a simple means for multivalent- or multiple boosting immunizations. This review presents various novel approaches for TI that is used alternative to parenteral immunizations.

KEYWORDS: Transdermal immunization, Langerhans cells, Skin, Vaccination.

Intranasal Route: A Novel Approach for CNS Delivery

Moon R. S., Mitkare S.S., Kshirsagar R.V, Kale A.G., Shinde N.D., Malewar A.S. and Pawde P.K.....970

ABSTRACT:

This review aims to evaluate the evidence for the existence of a direct nose to brain delivery. Blood brain barrier (BBB) represents one of the strictest barriers for delivery of drugs to brain due to restricted exchange of hydrophilic compounds, proteins between plasma and central nervous system (CNS).

From last few years due to restricted entry of many therapeutic agents to CNS, the diseases of CNS like Alzheimer's, parkinsonism, brain tumors, anxiety, neuronal disorders, depression etc. can't be treated efficiently. Different attempts were made for CNS drug delivery, but the fraction of drug reach to brain is too less due to BBB. Intranasal brain targeting is a new attempt for CNS delivery which bypasses the BBB and increases the fraction of drug reaches to CNS. This is because of direct contact of olfactory and trigeminal nerves with CNS. Here olfactory epithelium acts as channel for drug entering to brain. This pathway is novel, simple and non-invasive approach which eliminates the need for systemic delivery and unwanted systemic side effects. A wide variety of therapeutic agents without any modification can be delivered to brain by this route.

Therefore present study critically tries to evaluate the evidence of nasal-brain transport with a focus on drug carriers, transport pathways, formulation aspects and to suggest future strategies that may contributes in the field of nasal brain drug delivery.

KEYWORDS: Blood brain barrier (BBB), Central nervous system (CNS), olfactory epithelium, non-invasive.

Synthesis of 2, 3-disubstituted Quinazolin-4(3H)-ones-A Review

D. A. Patil, P. O. Patil, P. K. Deshmukh, G. B. Patil, B. D. Shewale, D. D. Patil and S. G. Gattani.....979

ABSTRACT:

The present review covers a concise account of the synthesis of bioactive 2, 3-disubstituted quinazolin-4(3H)-ones and the recent developments in the area of versatile quinazolinones with a special emphasis on new synthetic routes and strategies.

KEYWORDS: Quinazolin-4(3H)-ones, benzoxazinones, heterocyclic.

Thermal Ablation for Transdermal Drug Delivery

N.J. Rathod, J.A. Raval and N.P. Shah.....1004

ABSTRACT:

Skin makes an excellent site for drug delivery due to easy accessibility, immuno-surveillance functions, avoidance of degradation in the gastrointestinal tract and possibility of self administration. However, macromolecular drug delivery across the skin is primarily accomplished using hypodermic needles, which have several disadvantages like accidental needle-sticks, pain and needle phobia. These limitations have led to extensive research and development of alternative methods for drug delivery across the human skin. This review specially focuses on the recent developments in the field of thermal ablation micro-scale devices for transdermal drug delivery. It is complexity of implementation of this type permeation methods into devices that makes task challenging. In addition to the complexity of device fabrication and integration, issues related to maximizing delivery efficiency while minimizing undesirable reactions require significant research and development efforts.

Rapidly Dissolving Tablet: A Review

K. Senthil Kumar, R. Saravanan, D. Dhachinamoorthi, S. Chellaram and G. Thirumurugan.....1011

ABSTRACT:

This article attempts to present a detailed review regarding technological advances made in the area of evaluation of rapidly dissolving tablet (RDT). In recent years there has been rapid growth in the number of RDT available in the market. It has started gaining popularity and acceptance as new drug delivery system because they are easy to administer and lead to better patient compliance. Usually elder people experience difficulty in swallowing the conventional dosage form because of tremors and dysphagia. One such approach is rapid dissolving tablet a major claim of the RDT is increased bioavailability compared to traditional tablet. They involve different mechanisms like use of superdisintegrant which allow the dosage form to disintegrate rapidly in the patient mouth on contact with saliva.

KEYWORDS: Rapidly dissolving tablet, Dysphagia, Super disintegrants.

Plant Derived Ribosome Inactivating Proteins: An Overview

Nitin Kumar, Satyendra Singh, Manvi and Rajiv Gupta.....1018

ABSTRACT:

Many plants accumulate proteins that are commonly referred to as ribosome-inactivating proteins (RIPs). Biological effects described to these proteins go back to ancient times because of the high toxicity of seeds of castor bean (*Ricinus communis*) and jequirity bean (*Abrus precatorius*), as well as anti-HIV, the abortifacient activity of some plants like *Trichosanthes kirilowii* and *Momordica charantia*, rely on the presence of RIPs. Pokeweed antiviral protein, and ricin, previously described as ribosome-inactivating proteins were shown to damage single-stranded DNA by removal of a protein-specific set of adenines. RIPs are enzymes and some have multiple enzymatic activities. These enzymes are expected to damage DNA rather than participate in repair processes. All RIPs depurinated DNA extensively and some released adenine from all adenine-containing polynucleotides. The entire class of plant proteins, called ribosome-inactivating proteins, may be classified as polynucleotide: adenosine glycosidases. The significance of this DNAase activity to the biological function of these plant proteins along with their toxicity effect to animal cells remains to be fully understood.

KEYWORDS: Ribosome inactivating protein, Trichosanthin, Cytotoxicity, Antiviral protein, Abortifacient

Quinolones Chemistry and its Therapeutic Activities

Ajay Gadgul, Ramling Patarkar, Kamlesh Niranjane, Anant Deshpande and Sandeep Walsangikar.....1023

ABSTRACT:

The quinolones developed over the past few years have greater potency, a broader spectrum of antimicrobial activity that have a novel mechanism of action. As synthetic compounds, these agents have been developed extensively to optimize antimicrobial activity, pharmacokinetic properties, and drug safety. Although earlier quinolones were effective only in the genitourinary and gastrointestinal tracts and only had activity against aerobic gram-negative bacteria, newer quinolones have wider potential applications and a broader spectrum of activity. Recently some of the newer quinolones such as sparfloxacin, enoxacin, moxifloxacin have been reported concerning the cytotoxic effects on transitional cell carcinoma of bladder, colorectal carcinoma, prostate cancer cell and also active against mycobacterium tuberculosis. This article reviews the history, generation, mechanism of action and discusses quinolone pharmacophore and functional domain for guideline to synthesize novel quinolones with improved therapeutic activities. This article also highlights different therapeutic activities such as antibacterial, antimalarial, anti-mycobacterial, anti-tumor and anti-inflammatory activities of existing and new quinolones.

KEYWORDS: Quinolones, DNA –gyrase, topoisomerase, therapeutic activity.

RESEARCH ARTICLE

Effect of Different Superdisintegrant on Drug Release Behavior of Directly Compressible Domperidone Tablet

Swati C. Jagdale, Monali S Sali, Ajay L Barhate, Khushbu R Patil, Vishnu P. Chaudhari, Bhanudas S. Kuchekar and Anuruddha R. Chabukswar.....1029

ABSTRACT:

The aim of this study was to investigate the influence of superdisintegrant on drug release behavior of tablet prepared by direct compression technique. It is demonstrated that the disintegration and dissolution from tablets of poorly soluble, hydrophobic drugs i.e. Domperidone can be strongly improved by incorporation of hydrophilic, strongly swelling carriers like the super disintegrants sodium starch glycolate (SSG) and croscarmellose sodium (CCS), cross povidone (CP), KYRON T 314. As an effect of its lower swelling power, the super disintegrant Sodium Starch Glycolate is far less effective than the other super disintegrants. It was found, however, that tablet containing a too high concentration of the super disintegrant slow down the drug release from tablets. This effect is caused by the formation of a viscous barrier of the super disintegrant in the tablet during the dissolution process.

KEYWORDS: Superdisintegrant, Domperidone, Dissolution, wetting time.

Development, Characterisation and Evaluation of Shaving Gel Using Chitosan as a Gelling Agent

S.D. Pande, S.B. Joshi, N.N. Bobde, V.P. Wankhade and K.K. Tapar.....1033

ABSTRACT:

In modern era of fashion every one desires to look handsome. The competitive fashionable trend brings new look and demand every sunrise. Shaving preparations has become indispensable part of men's toiletries. To reduce the trauma of shaving, a wide range of preparations are now available that prepare the face and beard for shaving. The choice of the shaving preparation is highly individualistic; however, it is generally recognized that different forms of beard preparation are required for 'wet' (razor blade) and 'dry' (electric razor) shaving. Chitosan is a polymer used in various pharmaceutical preparations but its use in cosmetic has not been much explored.

In the present work chitosan has been used to prepare a shaving gel. The prepared gel was evaluated for various parameters like pH, viscosity, foaming capacity, spreadibility, beard softening etc. The results are reported.

KEYWORDS: Chitosan, Shaving gel

Evaluation of suspending property of fruit mucilage of *Abelmoschus esculentus*. (L) Medic

K.A. Kedar, U.V. Marakana and P.D. Chaudhari.....1036

ABSTRACT:

The present study was undertaken to evaluate the mucilage obtained from the fruit of *Abelmoschus esculentus* (Linn) Medic as a suspending agent. The main parts used in the plant are leaves, flowers, fruit and seed. The plant was found to contain mucilage and in our studies we have identified the mucilage in the fruit of the plant.

A suspension of Zinc oxide was used to yield a 20% w/v suspension in water using mucilage as suspending agent and it is evaluated for its stability using the parameters like sedimentation volume, separation volume, redispersibility, viscosity and pH. The suspending effect of abelmoschus mucilage was compared with Zinc oxide suspensions prepared in water using suspending agent such as sodium CMC and tragacanth. The result obtained indicated that the abelmoschus mucilage could be used as a suspending agent. It has low rate of sedimentation, high viscosity, basic pH and is easily redispersible. These effects were comparable with that of the standard suspending agents like sodium CMC and tragacanth. From the observation extracted mucilage from fruit of *Abelmoschus esculentus* has the potential as a suspending agent even at low concentration and can be used as a pharmaceutical adjuvant.

KEYWORDS: *Abelmoschus esculentus*, mucilage, suspending agent, zinc oxide

Synthesis and Evaluation of Some New Pyrazole Derivatives as Antimicrobial Agents

Kalpna Divekar, Shivakumar Swamy, Kavitha N., V. Murugan and Manish Devgun.....1039

ABSTRACT:

Chalcones prepared were treated with hydrazine hydrate to obtain pyrazolines, these compounds were further treated with chloroacetyl chloride and glacial acetic acid to obtain the titled compounds. The compounds were characterized by IR and H^1 NMR and were evaluated for their antimicrobial activity.

Synthesis and Evaluation of New Benzothiazole Derivatives as Potential Antimicrobial Agents

Vrushali N.Patil, Ameya G.Yadav, A.S.Bobade*, S.V.Athlekar, L.S.Patil and Abhay Chowdhary.....1044

ABSTRACT:

A series of pyrazolyl benzothiazole derivatives containing different substituent were synthesized. These pyrazolyl benzothiazole derivatives were evaluated for their antibacterial activity against *S. aureus* (Gram positive) and *S.typhi* (Gram negative) bacterial strains and antifungal activity against *C. albicans* and *A. niger* species.

KEYWORDS: Antibacterial, antifungal, formylated pyrazolyl benzothiazole, Microwave method.

Simultaneous Estimation of Olmesartan Medoxomil and Hydrochlorothiazide by Spectrophotometry in Tablet Formulation

Raman N. Kachave, Rajendra N. Bhadane, Rajendra Wagh and Deepti Jain.....1047

ABSTRACT:

Two precise, accurate, sensitive spectrophotometric methods has been developed and validated for the simultaneous estimation of Olmesartan Medoxomil (OLM) and Hydrochlorothiazide (HCT) in tablet formulation. In dual wavelength method absorbance difference at 254.8nm and 284nm were considered for estimation of OLM while HCT was estimated as single component at 322 nm. In simultaneous equation method estimation of OLM and HCT was carried out at 249nm and 273.5nm respectively. Regression analysis of beers plots showed good correlation in concentration range of 0-25 µg/ml for OLM and HCT respectively. Accuracy was determined by recovery studies from tablet dosages form and ranges from 98-101%. Precision of method was find out as repeatability, day to day and analyst to analyst variation and shows the values within limit (R.S.D. \leq 2).

KEYWORDS: Olmesartan Medoxomil, hydrochlorothiazide, Dual Wavelength Method, Simultaneous Equation Method

Design and Evaluation of Taste Masked Fast Disintegrating Tablet of Racecadotril

Gautam Singhvi, Mahaveer Singh, Gunja Chaturvedi and Sohiny Sharma.....1050

ABSTRACT:

Racecadotril is an antidiarrheal drug which acts as a peripherally acting enkephalinase inhibitor. racecadotril has an antisecretory effect—it reduces the secretion of water and electrolytes into the intestine. The aim of this study was to prepare, using taste masked granules, rapidly disintegrating tablets of Racecadotril, a bitter drug. The taste masked granules were prepared by solid dispersion technique and with polymeric granulation. In vitro release profile obtained at pH 6.8 indicate that perceivable amount of drug will not be released in saliva while high percent release (more than 75% in 60 min) would be obtained at pH 4.5. These taste masked granules were directly compressed into tablets using sodium starch glycolate as a super-disintegrant. The prepared tablets containing the taste masked granules having sufficient strength of 3.5 kg/cm were evaluated disintegration time, drug content, in-vitro release parameters. Developed formulation is more patient compliance dosage forms.

KEYWORDS: Racecadotril, Taste masking, solid dispersion, Super-disintegrant.

To Evaluate the Effect of Food and Other G.I. Factors on Osmotic Tablet of Aceclofenac

V.P. Wankhade, Sridhar. E., S.D. Ingole, Sameer Sheaikh and P.S. Kawtikwar.....1053

ABSTRACT:

Conventional oral dosage form has little or no control over the drug release, and effective concentration at the target site. Such kind of dosing pattern may results in constantly changing, unpredictable plasma concentrations. The rate and extent of drug absorption from conventional formulations may vary greatly depending on the factors such as-

A] Physio-chemical properties of the drug, B] Presence of excipient, C] Physiological factors such as presence or absence of food, D] pH of the gastro-intestinal tract (GI) and so on.

The majority of controlled release dosage forms systems are matrix-based, and their principal drug release mechanism is based on drug diffusion through the matrix system. This is altered by- 1] The pH of the medium, 2] Presence of food, 3] The body's physiological factors (G.I. motility). All these factors also responsible for release of aceclofenac from conational dosage form. Osmotic systems use the principle of osmosis as delivery force to deliver the drug from the system, and the release rate is unaffected by the body's pH and other physiological factors. So, the objective of the present work was to design osmotically driven oral drug delivery system containing aceclofenac as an active ingredient which is most beneficial for patients with long term treatment of NSAID's.

Validated HPLC Method for Determination of Contents of Residual Aminoguanidine in Drug Substances
Srivastava Bimal Kumar, Kushwah Dharmendra Kumar, Kolhe Prakash Yashwant and Patel Nitin.....1058

ABSTRACT:

This paper describes a validated method for the quantification of aminoguanidine in drug substances and their intermediates using High Performance Liquid Chromatography (HPLC), with a per column derivatization with 1-Naphthyl isothiocyanate. Derivative formed was analysed using a RP-18 HPLC column with pH 3 ortho-phosphoric acid and triethylamine buffer and Methanol as mobile phase with a gradient elution. Wavelength 220 nm was used for detection. The method is validated for its Specificity, Precision, Accuracy, Linearity Ruggedness and Robustness. Aminoguanidine is linear from 0.015µg/ml to 0.750 µg/ml with correlation coefficient 0.99609. Limit of Quantitation of the method is 0.015 µg/ml and Limit of Detection is 0.010 µg/ml.

KEYWORDS: Thiourea derivative, HPLC, UV-Vis detection, RP-18 column, 1-Naphthyl isothiocyanate, Limit of Quantitation, and Limit of Detection.

Cytotoxic and Antimicrobial Activity of Methanolic Extract of *Boerhaavia diffusa* L.

Mukesh Kumar Singh, A. Prathapan, Kushagra Nagori, S. Ishwarya and K.G Raghun.....1061

ABSTRACT:

In the present study, cytotoxic and antimicrobial activities of methanolic extract of *Boerhaavia diffusa* were investigated. The extract was tested against six bacterial species, seven fungi species and two types of yeast. Both stem and leaf extracts of *Boerhaavia diffusa* showed antimicrobial activity in a dose dependant manner (300-1800µg). Leaf extract of *Boerhaavia diffusa* showed maximum antibacterial activity against *Staphylococcus aureus sub sp aureus* (22 mm) and maximum antifungal activity against *Fusarium oxysporum* (13 mm). Cytotoxicity of the whole plant extract was assayed in HCT-116 and K-562 cell lines using MTT assay and the extract showed weak cytotoxicity in both of the cell lines.

KEYWORDS: *Boerhaavia diffusa*, anti microbial activity, cytotoxic activity, MTT assay.

Anthelmintic Activity of Methanolic Extract of *Stereospermum xylocarpum*.

Dhenge R, Katolkar P, Itankar P and Durgakar N.....1064

ABSTRACT:

Methanolic extract of tubers of *Stereospermum xylocarpum* (MESX) (*Bignoniaceae*) was studied for its anthelmintic activity using adult Indian earthworms, *Pheritima posthuma*. The results of the study indicated that the MESX possessed significant anthelmintic activity at dose 20 mg/mL.

KEYWORDS: Anthelmintic activity; *Stereospermum xylocarpum*.

Formulation and Evaluation Theophylline Floating Tablets and the Effect of Citric Acid on Release.

Tom Damien, Someshwara Rao B., Ashok Kumar P., Amith S. Yadav and Suresh V. Kuikarni.....1066

ABSTRACT:

The objective of this research work was to formulate and evaluate the floating drug delivery system containing theophylline as a model drug. Theophylline tablets were prepared by granulation method incorporating Methocel as swelling polymer, sodium bicarbonate, as gas generating agent, citric acid as release rate enhancer and excipients such as Magnesium stearate and lactose. Dissolution profiles were studied in medium 0.1N Hcl. The influence of variables like polymer type, citric acid on theophylline release profile was studied. The release mechanisms of theophylline from floating tablets were evaluated on the basis of Peppas's model. The 'n' value of all the formulations ranges from lowest 0.752 to highest 0.960 which was in the range of 0.45<n<1.0 which indicate the mechanism of release of theophylline was anomalous (non-Fickian) transport. The thickness, hardness, friability,

weight variation, drug content uniformity of the formulated floating tablets was evaluated. Tablets were also evaluated for swelling index, floating lag time and floating duration of all the formulations were within the range and floating duration of all the formulations were in the range of 7 to >10 hrs. Based on the evaluation results, S3 formulation was selected as the best formulation and was checked for stability at different temperatures 25°C / 60% RH, 35°C / 65% RH and 40°C / 75% RH. These results indicated that the selected formulation was stable. The drug release profile of the best formulation was well controlled and uniform throughout the gastrointestinal tract. Scanning electron microscopy (SEM) study represents the formation of gel structure. Different excipients were tested for their compatibility with theophylline such as FT-IR and DSC studies, which revealed that there is no chemical interaction occurred with other excipients.

KEYWORDS: Floating drug delivery systems (FDDS), Compatibility, FT-IR, Scanning electron microscopy (SEM), Differential scanning colorimetry (DSC), Theophylline, citric acid.

Inhibitory Response of *Carissa carandas* Root Extract on Lipid Peroxidation

Karunakar Hegde, Moses Samuel Rajan and Arun B Joshi.....1072

ABSTRACT:

In this study, response of ethanolic extract of the roots of *C. carandas* (ERCC) on membrane lipid peroxidation and antioxidant activity was evaluated by using series of *in vitro* models of chemical and rat liver homogenate. The ethanolic extract exhibited its radical scavenging effect in concentration dependent manner on 2,2-azinobis-(3-ethylbenzothiazoline-6-sulphonate) (ABTS), 1,1-diphenyl, 2-picryl hydrazyl (DPPH), super oxide, nitric oxide, erythrocyte haemolysis and the IC₅₀ values found to be 324.93, 185.08, 117.66, 242.69 and 70.82 µg/ml respectively. The extract was also evaluated for its inhibitory response on membrane lipid peroxidation by thiobarbituric acid reactive substances (TBARS) using young and aged rat liver homogenate. The extract was also effective in preventing membrane lipid peroxidation induced by FeSO₄/ascorbate in concentration dependent manner. The free radical protective activity may be attributed to its total antioxidant capacity and the presence of total polyphenolic contents. The results obtained in the present study indicate that the ethanolic extract of the roots of *C. carandas* can be a potential source of natural antioxidant and justify the therapeutic applications of the plant in the indigenous system of medicine.

KEYWORDS: *Carissa carandas*, Free radicals, Lipid peroxidation, Liver homogenate, TBARS

Evaluation of Suspending Properties of *Eulophia campestris* Wall. Mucilage

Govind Bhandari, C. S. Pounikar, Alok Sharma, Ajay Sharma and S.C. Mahajan.....1077

ABSTRACT:

Natural resources in general and plant materials in particular are receiving more attention due to their safety as pharmaceutical excipients. Present work assessed the potential of natural gum mucilage of *Eulophia campestris*, as suspending agent, and its utility to formulate a deflocculated suspension. The gum mucilage was extracted by multiple maceration technique using water and precipitation by acetone (30% w/v yield). Physicochemical characteristics of mucilage, such as solubility, swelling index, loss on drying, pH, viscosity and microbial load was determined. The macerated mucilage was evaluated for suspending property by preparing suspension in four different concentrations 1%-4%w/v. The suspensions were evaluated for rate of separation, degree of flocculation, redispersion, rheological property, pH determination and particle size analysis.

KEYWORDS: *Eulophia campestris* Wall. Mucilage, Suspending agent, Deflocculated suspensions, Sedimentation volume.

Formulation and Evaluation of Locust Bean Gum Based Matrix Tablets for Oral Controlled Delivery of Metformin Hydrochloride and Its Comparison with Marketed Product

Ashok Kumar P, Suresh V Kulkarni, Basavaraj, Nikunj Patel, Someshwara Rao B and Ramesh B.....1082

ABSTRACT:

The aim of present study was to formulate the oral controlled release metformin hydrochloride matrix tablets by using locust bean gum as rate controlling polymer and to evaluate drug release parameters as per various release kinetic models. The tablets were prepared by wet granulation method. Granules were prepared and evaluated for loose bulk density, tapped density, compressibility index and angle of repose, shows satisfactory results. All the granules were lubricated and compressed using 12.8 mm flat faced punches. Compressed tablets were evaluated for uniformity of weight, content of active ingredient, friability, hardness, in vitro release studies swelling and eroding behavior. All the formulations showed compliance with Pharmacopoeial standards. The in vitro dissolution study was carried out for 12 hours using paddle (USP type II) method in phosphate buffer (pH 6.8) as dissolution media. The prepared matrix tablets were shown 98.89%, 98.18%, 96.32%, 94.52%, 91.36% and 88.45% release over a period of 12 hours. Formulations F-1 and F-2 failed to sustain release beyond 8 hours and 10 hours, respectively. Among all the formulations, F-1 gave the release profile close to the marketed sample of metformin hydrochloride (M-SR), but slow and well controlled drug release was obtained from formulation F-4. The kinetic values obtained from different plots of formulation F-4 was close to the marketed sample of metformin hydrochloride (M-SR). The Selected formulation (F-4) was subjected to stability studies for 3 months, which showed stability with respect to release pattern. The drug release follows first order kinetics and the mechanism was found to be diffusion coupled with erosion. The FT-IR study did not show any possibility of metformin hydrochloride / locust bean gum interaction with the formulation excipients used in the study.

KEYWORDS: Controlled release, Hydrophilic matrix tablets, Locust bean gum, Metformin HCl.

Estimation of Nevirapine Anhydrous Bulk Formulation by Using IR, RP-HPLC, GC Methods

Ch. M.M. Prasada Rao, Ravikumar Konda, Narashimha Rao. R, S. Ramanjeneeyulu and Gangi Reddy. P.....1088

ABSTRACT:

The non nucleoside reverse transcriptase inhibitor Nevirapine (NEV), formulating sample is analyzed with instruments Infrared spectroscopy (IR), Reverse phase High performance liquid chromatography (RP-HPLC) and Gas chromatography (GC), the type of functional groups present in the NEV sample was analyzed with IR, the concentration of Nevirapine compounds NEV A, B and impurity-1 in the formulating nevirapine sample and the assay of nevirapine was done with HPLC with retention time greater than 5 and presence of residual solvents such as Dichloro methane, Chloroform, Dimethyl formamide, O-xylene was estimated with GC, the loss on drying and residue on ignition as 0.14 and 0.04 % w/w respectively.

KEYWORDS: Nevirapine anhydrous, IR, RP- HPLC, GC.

Analgesic Activity of 2-Hetero Substituted -4-Quinazolinones

V. Niraimathi and C. Vamsadhara.....1093

ABSTRACT:

Analgesic activity of newly synthesized series of 2-heterosubstituted-4-quinazolones (NN, NP, NC, NNB, NPB, NCB) were studied in mice. The analgesic activity was carried out at healthy male Swiss albino mice by writhing method and tail immersion method. Aspirin (150mg/kg p.o) and pentazocin (10mg/kg i.p) were used as positive controls for writhing and tail immersion method respectively. The synthetic compounds were administered orally in the dose of 30mg/kg, 90mg/kg as 1% CMC suspension. Results indicate that statistically significant reduction was obtained at 30mg dose level for compounds NP, NPB and NC by writhing Method. Their p value less than 0.05.

KEYWORDS: Quinazolinone; analgesic activity.

Simple Extractive Colorimetric Determination of Tramadol Hydrochloride by Acid-Dye Complexation Methods in Solid Dosage Form

R. Kalaichelvi and E. Jayachandran.....1096

ABSTRACT:

Two simple and sensitive ion-pairing spectrophotometric methods have been described for the assay of tramadol hydrochloride in pure form and in pharmaceutical formulations. The developed methods involve formation of colored chloroform extractable ion-pair complexes of the drug with Bromocresol Green (BCG) and Bromothymol Blue (BTB) in acidic medium. The extracted complexes showed absorbance maxima at 430, 424 nm for BCG, BTB, respectively. Beer's law is obeyed in the concentration ranges 5-40, 2-10 µg/mL with molar absorptivity of 7.2×10^3 , 1.8×10^4 , L mole⁻¹ cm⁻¹ for BCG and BTB, respectively. These methods have been successfully applied for the assay of drug in pharmaceutical formulations. No interference was observed from common pharmaceutical adjuvants. Results of analysis were validated statistically and through recovery studies.

KEYWORDS: Tramadol hydrochloride, Spectrophotometry, Validation

Thidiazuron Induced Direct Regeneration from Leaf Explants of *Scoparia dulcis* L. – A pharmaceutical Plant

Karthikeyan Subbarayan, Rajagopal Kalyanaraman, Prathima Badrinarayanan, Rajasekaran Murugan, Gowri Karthik and Gomathe Ravichandran.....1099

ABSTRACT:

Leaf explants of *Scoparia dulcis* L. gave rise to multiple shoots when cultured on MS medium supplemented with different concentrations of TDZ and IAA. The highest rate of shoot multiplication was obtained in MS medium containing 4.0 µM TDZ and 1.0 µM IAA (26.6 ± 0.98). Differentiated shoot buds elongated to 5.8 cm in 21 days in 9 µM KIN amended medium. The regenerated shoots were rooted on half-strength MS basal medium with different concentrations of IBA and IAA. The maximum number of roots was achieved on the medium containing 2.8 µM IBA. *In vitro* regenerated plantlets were transferred to plastic pots containing coco peat as a potting mix and were thereafter successfully established under *ex vitro* conditions. The survival percentage of transplanted plantlets was 90.6%.

KEYWORDS: *Scoparia dulcis*, medicinal plant, leaf explants, micropropagation, Thidiazuron.

Pharmacological Screening of *Bambusa vulgaris* and *Cocos nucifera* Root Extracts for Their Potential Diuretic Activity.

Potdar V.H., Pachupate V.J., Khavare N.B., Khot P.V., Koulavkar V.S. and Koulave S.B.....1103

ABSTRACT:

Cocos nucifera (Palmae) and *Bambusa vulgaris* (Gramineae) are used in Indian traditional medicine system as diuretics. However so far no scientific study revealed their diuretic potential. Therefore present study was undertaken to evaluate diuretic potential of aqueous extract of roots of *Cocos nucifera* and *Bambusa vulgaris* in albino rats. Preliminary phytochemical screening of aqueous extracts of both plants was carried out to determine the nature of phytoconstituents present in it. Acute toxicity of the both extracts was determined using wistar rats. The method described by Lipschitz *et al* and Kavimani *et al*, was employed for the evaluation of diuretic activity. Different parameters viz. total urine volume, urine pH, urine concentration of electrolytes such as Na⁺, K⁺ and Cl⁻, Na⁺/K⁺ ratio and diuretic index have been evaluated. Each extract was evaluated at 3 different doses as 100, 200 and 300 mg/kg B.W. of rat. Aqueous extract of *C.nucifera* roots exhibited dose dependent increase in the total urine volume and excretion of electrolytes. On the other hand, no significant diuretic activity was observed with aqueous extract of *B.vulgaris* roots. The diuretic potential of *C.nucifera* roots extract was statistically significant ($p < 0.05$) at dose 300mg/kg and comparable to that of the standard drug furosemide (20mg/kg i.p.).

KEYWORDS: *Cocos nucifera*, *Bambusa vulgaris*, Diuretic activity, Electrolyte excretion

High Performance Thin Layer Chromatographic Determination of Spironolactone and Torsemide in Combined Tablet Dosage Form

Nilesh V. Gaikwad, Padmanabh B. Deshpande, Santosh V. Gandhi and Kapil K. Khandagale.....1106

ABSTRACT:

A new simple High Performance Thin Layer Chromatographic (HPTLC) method for determination of Spironolactone and Torsemide in combined tablet dosage form has been developed and validated. The mobile phase selected was n-Hexane: Ethyl acetate: Methanol: Glacial acetic acid (7: 3: 1.5: 0.5 v/v/v) with UV detection at 263 nm. The retention factor for SPL and TSM were found to be 0.67 ± 0.03 and 0.34 ± 0.03 . The method was validated with respect to linearity, accuracy, precision and robustness. Results found to be linear in the concentration range of 100-1000 ng/band for SPL and TSM respectively. The method has been successfully applied for the analysis of drugs in pharmaceutical formulation. The % assay (Mean \pm S.D.) was found to be 99.75 ± 0.134 for SPL and 98.67 ± 0.153 for TSM.

KEYWORDS: Spironolactone, Torsemide, High Performance Thin Layer chromatography

Formulation and Evaluation of Floating Drug Delivery Systems of Famotidine Tablets

Y. Indira Muzib and Malleswari.K.....1109

ABSTRACT:

Famotidine has been the most widely used drug for the treatment of peptic ulcer for many decades. The present investigation concerns the formulation and evaluation of floating tablets of famotidine which after oral administration, to prolong the gastric residence time, increase drug bioavailability and target the gastric ulcer. A floating drug delivery system was developed using hydroxy propyl methyl cellulose K100M, carbopol 940P and gas-forming agent sodium bicarbonate. The prepared tablets were evaluated in terms of their pre compression parameters, physical characteristics, *invitro* release, duration of buoyancy, buoyancy lag time. The prepared tablets exhibit satisfactory physical characteristics. All formulations show good *in vitro* buoyancy. The formulations were optimized for the different viscosity grades of hydroxy propyl methyl cellulose K100M, carbopol 940P its concentration and combinations. The results of the *invitro* release studies show that the formulations remain buoyant for more than 8 hrs. The formulations were subjected to various kinetic release investigations and it was found that the mechanism of drug release was from polymeric relaxation. Optimized formulation (F7) showed no significant change in physical appearance, drug content, total buoyancy time and optimized formulation stable at $40^{\circ} \pm 2^{\circ} \text{C}$ RH for three months. Finally the tablet formulations found to be economical and may overcome the draw backs associated with the drug during its absorption.

KEYWORDS: Famotidine, floating drug delivery systems, In vitro buoyancy.

Validated Spectrophotometric Determination of Prulifloxacin in Tablet Dosage Form

Anuradha D. Mahapatra and Krishna R. Gupta.....1114

ABSTRACT:

Two simple, accurate and precise UV-Spectrophotometric methods have been developed and validated for the estimation of Prulifloxacin in pharmaceutical tablet. Method I was based on Spectrophotometric measurement of Prulifloxacin at absorption maxima at 272.4 nm and Method II area under curve was applied for analysis of Prulifloxacin in the wavelength range 264.0 to 277.2 nm. The drug was found to obey Beer's -Lambert's law obeyed in the concentration range of 5-25 $\mu\text{g/mL}$ and the correlation coefficients were found to be 0.999 for both methods. The Percent estimation of the drug was found nearly 100 % for both the methods. The percent recoveries were found to be 100.37% for method I and 100.64% for method II representing accuracy of the methods. Validation of the proposed methods was carried out for its accuracy, precision, linearity, ruggedness according to ICH guidelines. The limit of detection was found to be 0.8 for both the methods and the limit of quantitation was found to be 2.4 for method I and 2.42 for method II. The developed methods were also compared statistically using unpaired t-test by Welch Correction. The proposed methods can be successfully applied in routine work for the determination of Prulifloxacin in bulk and pharmaceutical tablet dosage form.

KEYWORDS: Prulifloxacin, UV spectroscopy, Absorbance Maxima Method, Area under Curve Method.

Simultaneous Spectrophotometric Estimation of Drotaverine Hydrochloride and Diclofenac Potassium in Combined Dosage Form

Snehal S. Ingale, Sumit A. Abnawe, Santosh N. Shinde, Archana S. More, Vishnu P. Choudhari and Bhanudas S. Kuchekar.....1118

ABSTRACT:

Two simple, rapid, accurate and economic spectrophotometric methods are described for the determination of Drotaverine Hydrochloride (DRO) and Diclofenac Potassium (DIC) in combined dosage form. The first method is First Derivative and second is Absorption Corrected method. The amplitudes at 248.92 nm and 242.64 in the first derivative spectra were selected to determine Drotaverine Hydrochloride (DRO) and Diclofenac Potassium (DIC), respectively in combined formulation. The second method was based on the absorption corrected method in which DRO and DIC exhibit λ_{\max} at 358.41 nm and 277.27 nm, respectively in double distilled water. DRO has some interference due to DIC at 277.27 nm, while DIC do not show any absorption at 358.41 nm. Quantitative estimation of DIC was carried out by subtracting the absorption due to DRO at 277.27 nm using experimentally calculated absorption factor. Beer's law was obeyed in the concentration range of 8-40 $\mu\text{g mL}^{-1}$ for DRO and 5-25 $\mu\text{g mL}^{-1}$ for DIC for both the methods. The results of analysis have been validated statistically and recovery studies confirmed the accuracy and reproducibility of the proposed methods which were carried out by following ICH guidelines.

KEYWORDS: Drotaverine Hydrochloride (DRO), Diclofenac Potassium (DIC), First Derivative Spectrophotometry, Absorption corrected.

UV Spectrophotometric Determination of Abacavir Sulphate in Bulk and Tablet Formulations

Chandrasekaran N, Manikanthakumar J, Vengadesh M, Saravanan V.S, Senthil S.P, Mohanraj P and Kulanthavel T.M.....1122

ABSTRACT:

A new simple, sensitive, precise and economical Spectrophotometric method of analysis for abacavir sulphate both as a bulk and tablet formulation was developed and validated. The method developed with 15 % phosphoric acid and distilled water as solvent. The drug was then estimated at 283 nm. The linear regression analysis data for the calibration plots showed good linear relationship with $r^2 = 0.9998$ in the concentration range 5 - 30 $\mu\text{g/ml}$. The mean value of correlation coefficient, slope and intercept were 0.9998, 0.032 and 0.0294 respectively. The method was validated for precision, accuracy and recovery studies. LOD and LOQ for Abacavir sulphate were found to be 0.5671 $\mu\text{g/ml}$ and 1.7187 $\mu\text{g/ml}$ respectively. The method has been successfully applied in the analysis of marketed formulations.

KEYWORDS: Abacavir sulphate; UV Spectrophotometric analysis

Phytochemical Screening and *In-vitro* Studies on Anti-Inflammatory Properties of *Sapindus emarginatus*

Kavita Varghese, S. Chitra and Sheik Abdul Azeez Sheriff.....1125

ABSTRACT:

Sapindus emarginatus Vahl belongs to the family Sapindaceae. The aqueous extract of the pericarps of *Sapindus emarginatus* Vahl was screened for its phytochemical content and evaluated for anti inflammatory activity in-vitro. The results of the phytochemical screening revealed the presence of saponins, terpenoids, tannins, flavonoids, cardiac glycosides and sugars. The aqueous extract showed marked inhibition of protease activity and protein denaturation.

KEYWORDS: *Sapindus emarginatus*, Anti-inflammatory, Phytochemicals.

Preparation and In-Vitro Evaluation of Abacavir Sulphate Loaded Microspheres Cross-Linked by Different Concentrations of Glutaraldehyde

Senthil S.P, Chandrasekaran N, Vengadesh M, Ganesan V, Sudhamani T and Senthilkumar K.L.....1128

ABSTRACT:

Abacavir Sulphate loaded microspheres were formulated by using an enteric polymer Ethylcellulose by Solvent Evaporation Technique (SET) with HPMC 5C, Eudragit RSPO, and Eudragit RLPO to develop a sustained release dosage form. The effects of different concentration of cross-linking agent (Glutaraldehyde) on the percentage of drug loading, biodegradability of microspheres and drug release kinetics, particle size, entrapment efficiency, angle of repose, bulk density, SEM were investigated in this study. Moreover, the kinetics of Abacavir Sulphate released from different microspheres were analyzed using four different theoretical models, that is, Zero order, First order, Peppas's, and Higuchi models. Microspheres prepared with different concentration of Glutaraldehyde indicated different release kinetics. Increasing the Glutaraldehyde concentration decreased the release rate of Abacavir Sulphate from microspheres because of formation of greater structural strength and more tightly texture with the drug. Besides, microspheres gave an adequate fit to either zero order or first order kinetic models, depending on the extent of cross-linking reaction between drug and the cross linking agent.

KEYWORDS: Abacavir sulphate; Microspheres; Glutaraldehyde; Release mode

Preclinical Evaluation of Antidiabetic Effect of *Pedilanthus tithymaloides* Extracts in Streptozotocin (STZ) Induced Diabetic Rats

S Adhikary, CC Kandar, PK Haldar, A Basu, S Choudhury.....1132

ABSTRACT:

Dried and powdered leaves of the plant *Pedilanthus tithymaloides* was extracted successively with chloroform and methanol using Soxhlet extractor and the extracts were dried under reduced pressure at a temperature not exceeding 40°C. These extracts were subjected to different phytochemical tests and in the evaluation of antidiabetic potential on streptozotocin induced diabetic rats. Both the extract showed significant antidiabetic activity.

KEYWORDS: Antidiabetic activity, streptozotocin induced diabetes, *Pedilanthus tithymaloides*

In-vitro* Pediculicidal Activity of Juice from Clove of *Allium sativum

Vivek Shrivastava and U.K. Jain.....1134

ABSTRACT:

Head lice are a global public-health apprehension affecting primary school age children. The control of lice presents research challenges and prediction for the identification of new, safe insecticides. *Allium sativum* (commonly known as garlic) is a species belonging to family Alliaceae. Garlic has been used for both culinary and medicinal purposes. In an attempt to assess the lethality, *Allium sativum* aqueous extracts were tested in *In-vitro* toxicity model against human adult lice. The lice were observed for lack of response to stimuli over 3 hour period. The results demonstrated that raw juice of *Allium sativum* clove showed pediculicidal efficacies of 90±10 per cent (P< 0.01 over control). The experimental evidence obtained in the laboratory model could provide a rationale for the use of *Allium sativum* juice to be included in formulations for controlling head lice.

KEYWORDS: *Allium sativum*, Licideal activity, Aqueous extract, *Pediculus humanus capitis*

Anxiolytic Effect of a Methanolic Extract of the *Embelia ribes* Burm F. In Mice

M.M. Ghaisas, A.D. Wadikar, T.B. Gulati and R.P. Limaye.....1136

ABSTRACT:

In the present study the anxiolytic activity of methanolic extract of *Embelia ribes* Burm f. (ER) was evaluated. The anxiolytic activity was evaluated using elevated plus maze, hole board test, mirrored chamber apparatus and

alongwith biochemical estimation of GABA. In the elevated plus maze test, ER (100 and 300 mg/kg p.o.) significantly ($P<0.01$) increased the number of entries and time spent in open arm. In the hole board test, ER (100 and 300 mg/kg p.o.), showed significant increase ($P<0.01$) in number of head dips. In the mirrored chamber apparatus, ER showed significant increase in the number of entries and time spent in mirrored chamber, along with significant decrease in the latency to enter the mirrored chamber. ER (300 mg/kg, p.o.) showed significant ($P<0.01$) increase in the brain GABA level. The results indicate that ER possesses significant anxiolytic activity probably by increasing the GABA concentration in the brain.

KEYWORDS: Anxiolytic; *Embelia ribes*; Elevated plus-maze; GABA

Formulation and Evaluation of Swellable Controlled Release Multiparticulate Drug Delivery System Using Drug Combination

V. B. Warade, V.N. Deshmukh, S. B. Deshmukh, S. S. Jaiswal and D. M. Sakarkar.....1140

ABSTRACT:

The recent pharmaceutical application multiparticulate dosage form are gaining much favour over single unit dosage form because of their potential benefit like predictable gastric emptying, no risk of dose dumping, flexible release pattern and increase bioavailability with less inter and intra subject variability. Captopril and Hydrochlorothizide have synergistic antihypertensive action act by inhibiting ACE, block the active reabsorption of sodium (Na^+) and chloride (Cl^-) with water in the distal tubule respectively. The controlled release multiparticulate drug delivery system was developed by using hydrophilic gums as release modifier polymers. The optimal therapeutic effect of the dosage form was developed using Captopril ($t_{1/2}$ - 1.9 hours) and Hydrochlorothizide ($t_{1/2}$ - 6 to 15 hours). In the first step the influence of the combination of Xanthum gum, Karaya gum and Gaur gum on swelling and viscosity were investigated. The combination of Captopril and gum blend in ratio 1:1.5 and Hydrochlorothizide and gum in 1:0.5 ratios are optimized. In general, the release parameters shows that, two major factors control drug release from swelling controlled matrix systems, (i) the rate of aqueous medium infiltration into the matrix, followed by a relaxation process and (ii) the rate of matrix erosion. The controlled release and immediate release preparation are found by their dissolution profile.

KEYWORDS: Multiparticulate, Xanthum gum, Karaya gum, Gaur gum, Drugs

Synthesis and Study of Some 1, 2, 4-Triazole derivatives

Yogesh Jadhav, Rajeev Varma, Vrushali Patil, A. S. Bobade, S. V. Athlekar and Abhay Chowdhary.....1144

ABSTRACT:

The 3-Hydroxy pyridine on reaction with ethylchloro acetate in presence of K_2CO_3 followed by the reaction with hydrazine hydrate resulted in the formation of 3-pyridoxy acetyl hydrazide (**III**), which on further the reaction with CS_2 and KOH gave potassium salt of thiosemicarbazide which on reaction with excess of hydrazine hydrate in ethanolic medium form 3-(3-pyridoxymethyl)-4-amino-5-mercapto-1,2,4-triazole (**II**). Compound (**II**) when condensed with various substituted benzaldehydes gives 3-(3-Pyridoxymethylene)-4-(N-substituted benzylidinylamino)-5-mercapto-1,2,4-triazole derivatives. These structures are determined by the elemental analysis and spectral data (IR, $^1\text{H-NMR}$). These new derivatives are evaluated for *in vitro* antimicrobial activity against *Staphylococcus aureus* (ATCC 3750), *Salmonella typhi* (NCTC 786), *Candida albicans* (ATCC 10231) and *Aspergillus niger* (ATCC 16404).

KEYWORDS: 3-Hydroxy pyridine, Mercapto Triazoles, Anti-bacterial, Anti-fungal.

Studies on the Effect of Ternary Complex Formation of Simvastatin:β-Cyclodextrin with Polyvinyl Pyrrolidone and Hydroxypropyl Methylcellulose.

Lingaraj S Danki and Sachin S. Thube.....1148

ABSTRACT:

Simvastatin is a HMG CoA reductase inhibitor drug (Hypolipidemic Drug) has poor aqueous solubility. The effect of β-CD and water soluble polymers like polyvinyl pyrrolidone (PVP) and Hydroxypropyl methyl cellulose (HPMC) on aqueous solubility and dissolution rate of Simvastatin were investigated. The present study describes the complexation of Simvastatin(SV) with β-CD for improved solubility property, for further improvement in solubility ternary complex systems were prepared using water soluble polymers like PVP and HPMC. The complexation was studied by phase solubility method. The phase solubility study of SV- β-CD indicated the formation of complex in the solution. The value of apparent stability constant, K_c was found to be $825.5M^{-1}$. The phase solubility studies also indicated the formation of inclusion complexes of SV-β-CD – polymers. The value of apparent stability constant, K_c was found to be $785.7M^{-1}$ for PVP and $766.8M^{-1}$ for HPMC. The formation of 1:1M inclusion complexes with β-CD and along with hydrophilic polymers like PVP and HPMC in the solid state were confirmed by Fourier Transform Infrared spectroscopy (FTIR) and differential scanning calorimetry (DSC) and comparative study and the *in-vitro* dissolution were carried out. The complexes were prepared by kneading method. The ternary complexes prepared showed higher dissolution rates and dissolution efficiency values than pure drug and other binary complexes. The order of hydrophilic polymers enhancing dissolution rate of β-CD complexes was found to be PVP > HPMC.

KEYWORDS: Simvastatin, β-Cyclodextrin, water soluble polymers and kneading method.

Solubility Enhancement of Pioglitazone by Using Poloxamer (188 and 407) with the Help of Kneading Method

Vaibhav A. Jagtap, Ajay N. Talele, Atul R. Bendale, Sachin Narkhede, Anil Jadhav and G. Vidyasagar.....1152

ABSTRACT:

Pioglitazone is a poorly water-soluble (BCS class II) antidiabetic drug. Due to the poor water solubility of this drug, its bioavailability is dissolution rate-limited. The purpose of this study was to increase the solubility of Pioglitazone(PG) in aqueous media by inclusion complex (IC) technique with Poloxamer (PXM) 188 and Poloxamer (PXM) 407 by using the kneading method. The PG-PXM inclusion complex system was characterized by Differential scanning calorimetry (DSC), X-ray powder diffraction (XRD) analysis, Fourier transform-infrared spectroscopy (FT-IR) and Scanning electron microscopy (SEM), and in vitro dissolution studies. No chemical interaction was found between PG and PXM 188 or PXM 407. The results from DSC, XRD and SEM studies show that PXM 188 or PXM 407 inhibits the crystallization of PG. The ICs prepared in this study were found to have better dissolution rates in comparison to intact PG and physical mixture of PXM 188 or PXM 407. It was found that the optimum weight ratio for drug: Carrier is 1:6 for PXM 188 and 1:6 for PXM 407

KEYWORDS: Pioglitazone, kneading, poloxamer, inclusion complex

Characterization of Etoricoxib Solid Dispersions Prepared By Spray Drying Technique

Viraj V. Kulthe and Praveen D. Chaudhari.....1158

ABSTRACT:

Various techniques have been adopted for the improvement of solubility properties of poorly water- soluble drugs. Physical transformation is one of the promising approaches for improving solubility and dissolution rate of such drugs. Though the amorphous polymorph exhibits better biopharmaceutical properties, it is metastable and tends to revert back with time to thermodynamically more stable crystalline state. That is, stabilization of an amorphous form of poorly water- soluble drugs is another challenge in the formulation development of such drugs. The present study was aimed at preparation of solid dispersions of poorly water- soluble drug, etoricoxib using non- ionic surfactants as poloxamers by spray drying technique and to characterize the solid dispersions thus prepared by Infrared spectroscopy, dissolution studies, Differential Scanning Calorimetry, Thermo-gravimetric analysis, X-Ray Powder Diffraction and Scanning Electron Microscopy. Appearance of solid dispersions like matrix of near- spherical

microparticles indicated presence of amorphous form of etoricoxib in solid dispersions. Absence of etoricoxib endotherm in DSC thermograms of solid dispersions suggested physical transformation of crystalline etoricoxib, which was confirmed by significantly decreased intensity of etoricoxib peaks in XRPD profiles of solid dispersions. Dissolution studies showed a significant enhancement in solubility characteristics of drug in solid dispersions as compared to pure etoricoxib and spray-dried etoricoxib. During stability testing, the optimized proportions of solid dispersions reported only an insignificant decrease in solubility characteristics of drug, but the saturation solubility and dissolution rate of spray-dried etoricoxib dropped drastically. Poloxamer-188 and poloxamer-407 were equally efficient in retaining the drug in its amorphous form. The study thus reveals tremendous potential of solid dispersions of drug with poloxamers to enhance its solubility.

KEYWORDS: Solubility enhancement, spray drying, Etoricoxib, Poloxamers

Validated RP- HPLC Method for the Quantitation of Nebivolol in Bulk and Pharmaceutical Dosage Forms

M.R. Santhosh Kumar, K.P. Channa Basavaraj, C. Jose Gnana Babu and T. Tamizh Mani.....1167

ABSTRACT:

A simple, specific, accurate, precise and sensitive Reverse Phase High Performance Liquid Chromatographic method has been developed for the quantitation of Nebivolol in both pure and pharmaceutical dosage forms. A Phenomenex Gemini C-18, 5 µm column having 250 x 4.6 mm internal diameter in isocratic mode with mobile phase containing Acetonitrile : 50mM Ammonium acetate buffer (60 : 40 v/v) and adjust the pH to 3.5 by using glacial acetic acid. The flow rate was 1.0 ml / min and the effluents were monitored at 282 nm. The retention time was 3.783 min. The linearity was in the range of 20-100 µg / ml. This method was validated for linearity, precision, limit of detection, limit of quantitation, accuracy, ruggedness and robustness. Statistical analysis proves that the method is reproducible and selective for the estimation of the said drug.

KEYWORDS: RP-HPLC, Nebivolol, Validation.

Evaluation of Phyto Pharmaceutical and Antioxidant Potential of Methanolic Extract of Peel of *Punica granatum*

Himesh Soni, Govind Nayak, Kaushelendra Mishra, A.K. Singhai and A.K. Pathak.....1170

ABSTRACT:

Pomegranate is the Fruit of Energy, Vitality and Medicinal Value. A number of medicinal uses has been reported some important once are, Anthelmintic Activity, Immuno-Stimulatory Activity, Hepato-Protective Activity, Antidiarrhoeal Activity, tumor growth inhibitory activity. The In-Vitro and In-Vivo antioxidant activity of peel of methanolic extract of *Punica granatum* has been investigated by 1,1, Diphenyl, 2-picryl hydrazyl free radical(DPPH), Reducing power and Nitric oxide, Lipid peroxidation scavenging Method. The methanolic extract of peel of *Punica granatum* showed significant antioxidant activity by inhibiting DPPH, Reducing power and when compared with standard ascorbic acid, antioxidant activity by Nitric oxide assay revealed that IC50 of *Punica granatum* was comparable with Standard (Curcumin) IC50, In-Vivo antioxidant activity *Punica granatum* on ethanol-induced changes were more or less similar and comparable with the vitamin C treatment.

KEYWORDS: *Punica granatum*, DPPH, antioxidant, Reducing power

Polymeric Transdermal Drug Delivery Films of Iso-Sorbide Dinitrate.

Kalmath K.V, Swamy H.K.S and Inamdar S.S.....1175

ABSTRACT:

Matrix type of polymeric transdermal drug delivery films of Iso-Sorbide dinitrate (ISDN), an anti-anginal agent were formulated by using ethyl cellulose, as a film forming polymer, polyethylene glycol-4000(PEG-4000) and dibutyl phthalate as plasticizers. The transdermal films were evaluated for physicochemical properties like tensile strength, folding endurance, thickness uniformity, percentage elongation, drug content uniformity. In-vitro drug

release rate was studied through excised rat's abdominal skin using Keshary-Chein diffusion cell. It was found that the increase in the PEG-4000 ratio with the polymer, increases permeability properties of the polymeric films. The preformulation studies indicate that the polymer and drug are compatible. The drug release from matrix films was found to be of zero-order kinetics. The primary skin irritation tests were found to be negative or non-significant.

KEYWORDS: Iso-sorbide dinitrate (ISDN), Transdermal therapeutic system (TTS), Ethyl cellulose (EC), skin irritation.

Evaluation of Analgesic and Anti-inflammatory Activity of Bark of *Neolamarckia cadamba* in Rodents

Chander Hass, Parveen Kumar, Dheeraj Rajak, S.K. Jain and Manish M. Wanjari.....1178

ABSTRACT:

In view of ethnobotanical and traditional use of *Neolamarckia cadamba* in pain and inflammatory conditions the present study evaluated the analgesic and anti-inflammatory activity of methanolic extract of its bark in rodents. Analgesic effect was studied in acetic acid induced writhing and hot plate analgesic model of pain while anti-inflammatory activity was investigated using carrageenan induced paw edema (acute) and cotton pellet granuloma and grass pith granuloma (sub-acute) models of inflammation. The methanolic extract of bark of *Neolamarckia cadamba* was administered orally in the doses of 100, 200, 400 and 800 mg/kg/day of body weight. The extract showed significant peripheral and central analgesic effect and anti-inflammatory activity which were comparable to standard drugs. The observed effects were attributed to the various phytochemicals present in bark of *N. cadamba*. These investigations provide the scientific rationale for the traditional claim of *Neolamarckia cadamba* as analgesic and anti-inflammatory agent.

KEYWORDS: *Neolamarckia cadamba*, analgesic, anti-inflammatory, traditional, bark.

Estimation of Esomeprazole in Bulk and Tablet Dosage Form by Use of Planar Chromatography

S.A. Gosavi, G.B. Bhavar, S. B. Chepurwar, A. A. Shirkhedkar, S. B. Bari, S. J. Surana.....1185

ABSTRACT:

A simple, rapid, and reliable HPTLC method has been established for determination of Esomeprazole magnesium trihydrate (ESO) in tablets. Identification and determination were performed on 10 cm × 10 cm aluminum backed silica gel 60 F254 TLC plates, previously washed with methanol and using ethyl acetate: ammonia, 8: 0.8 (v/v) as mobile phase. Detection was performed at 301 nm. Calibration plots were linear in the range 100–500 ng/spot for Esomeprazole magnesium trihydrate with correlation coefficients, *r*, 0.9992. The suitability of this HPTLC method for quantitative determination of compound was proved by validation in accordance with the requirements of ICH guidelines. The method was used for determination of the compound in commercial pharmaceutical dosage forms. The method is simple, reproducible, and accurate and is a more effective option than other chromatographic techniques in routine quality control.

KEYWORDS: HPTLC, Pharmaceutical dosage forms, Esomeprazole magnesium trihydrate

Antioxidant and Antiproliferative Activity of Root Suspension Culture of *Morinda citrifolia* L.

Sarika R. Deshmukh, Solomon Habtemariam and Prasad A. Wadegaonkar.....1189

ABSTRACT:

Morinda citrifolia, commonly known as Noni or Indian Mulberry (Rubiaceae), is one of the traditional folk medicinal plants that have been used for over 2000 years in Polynesia and has been reported to have a broad range of therapeutic effects. In the present study, the antioxidant activity and cytotoxicity of methanolic extract of root suspension culture of *Morinda citrifolia* were evaluated. Antioxidant activity was evaluated by DPPH radical scavenging and reducing power assays whereas cytotoxicity was evaluated by MTT assay and Alamer Blue assay. The root suspension culture extract showed DPPH scavenging activity in a dose dependent manner with IC₅₀ value of 92.5 ± 5.65 µg/ml. The root suspension extract had shown a significant cytotoxicity against mouse melanoma (B16) and human breast cancer (MCF-7) cell lines with IC₅₀ values of 295 ± 14.14 µg/ml and 472.5 ± 17.67 µg/ml respectively. The phenolics and flavonoids were also evaluated quantitatively to study the effect of these compounds

on antioxidant and antiproliferative activity of *Morinda citrifolia*. The levels of phenolics and flavonoids were 22.4 ± 0.28 mg/g and 218 ± 6.26 mg/g respectively.

The above mentioned results shows that the high phenolic and flavonoid contents of the plant might be responsible for the observed potent antioxidants and significant antiproliferative activity of *Morinda citrifolia* root culture extracts.

KEYWORDS: Antioxidant, Antiproliferative, *Morinda citrifolia*, Rubiaceae.

Simultaneous Estimation of Aceclofenac and Paracetamol in Bulk and Combined Tablet Dosage Form and From Biological Fluid by Planar Chromatography

Poonam P. Patil, Mahesh M. Deshpande, Veena S. Kasture and Seema A. Gosavi.....1194

ABSTRACT:

A simple, accurate, reproducible, rapid and precise high-performance thin-layer chromatographic method has been established and validated for simultaneous determination of Aceclofenac and Paracetamol in bulk and combined tablet dosage form and from biological fluids. Both the drugs were separated on aluminum plates precoated with silica gel 60 F254; Toluene: n- Butanol (7:3v/v) was used as mobile phase. Quantitative analysis was performed by densitometric scanning at 263 nm. The R_F values of aceclofenac and paracetamol were 0.14 and 0.43, respectively. The calibration plot was linear over the range of 200–1200 ng/spot for aceclofenac and paracetamol, with correlation coefficients, r , 0.9979 and 0.9995, respectively. Recovery of aceclofenac and paracetamol was 100.14–101.80 and 100.04–100.32%, respectively. The suitability of densitometric TLC for quantitative analysis of these compounds was proved by validation in accordance with the requirements of ICH guidelines. The recovery of aceclofenac and paracetamol from biological fluids (albumin and plasma) by solvent - solvent extraction using ethyl acetate: acetonitrile (3:1v/v) was 89-90% and 90-98% respectively.

KEYWORDS: Aceclofenac, Paracetamol, HPTLC, biological fluid.

Formulation and Evaluation its Anti diabetic Activity of Liquid Oral Preparation of *Gymnema sylvestre* and *Stevia rebaudiana* and Their Combination in Alloxan Diabetic Rats.

P.M. Patil, P.D. Chaudhari, N.J. Duragkar and P.P. Katolkar.....1200

ABSTRACT:

The work presented here deals with formulation, evaluation and validation of liquid oral preparation of *Gymnema sylvestre* and *Stevia rebaudiana* and their combination to study its antidiabetic activity. The antihyperglycemic activity of aqueous extract of *Gymnema sylvestre* and their combination were evaluated; diabetes was induced in albino rats of either sex by a single intraperitoneal injection of aqueous alloxan monohydrate (120 mg/kg). Single dose study with aqueous extract of *Gymnema sylvestre* (100 mg/kg) - Combination treated, equal proportion, 100 ml/kg and showed significant ($p < 0.001$) decrease in serum glucose level at 2, 4 and 6 hr. Continuous treatment with aqueous extract of *Gymnema sylvestre* (100 mg/kg), Combination treated, equal proportion, 100 ml/kg for a period of 28 days showed a significant decrease ($p < 0.001$) in serum glucose level in diabetic rats. Maximum reduction of serum glucose level occurred - Combination treated, equal proportion, 100 ml/kg. It may be said that - combination treated, equal proportion, 100 ml/kg of the aqueous extract of *Gymnema sylvestre* and *Stevia rebaudiana* decreased the serum glucose level and improved glucose tolerance.

KEYWORDS: Anti-Diabetes, *Gymnema sylvestre* and *Stevia rebaudiana*, Alloxan, Albino rats, Glibenclamide

Formulation and Evaluation of Controlled Porosity Osmotic Pump Tablet of Ranitidine Hydrochloride.

Jagtap P.C., Awargaonkar A.V., Kuchekar S.B. and Bhise K.S.....1205

ABSTRACT:

In the present study controlled porosity osmotic pump system (CPOP) has been developed in the presence of different channeling agents in the coating. Ranitidine hydrochloride was chosen as a model drug due to its short half

life. The effect of osmogen (sodium chloride) concentrations on the in-vitro release of drug was examined. Cellulose Acetate (CA) was used as a semi permeable membrane. It was found that the rate of drug release increased with change in osmogen concentration due to increased water uptake and hence increased driving force for drug release. The presence of pore forming agents rendered the desired zero order drug release for the period of 10-12 h. The optimized formulations were stable for three months when subjected to stability studies as per ICH guidelines.

KEYWORDS: Osmotic System, Pore former, Drug release

Spectrophotometric Estimation of Risedronate Sodium in Bulk and Pharmaceutical Formulations using Multivariate Technique

S. Kathirvel, V. Sahiti and A. Suneetha.....1209

ABSTRACT:

A sensitive, accurate and economical UV spectrophotometric method with multivariate calibration technique for the determination of risedronate sodium in bulk drug and pharmaceutical formulation has been described. This technique is based on the use of the linear regression equations by using relationship between concentration and absorbance at five different wavelengths. The results were treated statistically and were found highly accurate, precise and reproducible. The method is accurate, precise and linear within the range 10-60µg/ml. There was no interference from the excipients. This statistical approach gives optimum results for the eliminating fluctuations coming from instrumental or experimental conditions.

KEYWORDS: UV Spectrophotometry; Multivariate Calibration; Pharmaceutical Formulation.

Preparation and Evaluation of Chitosan Containing Mucoadhesive Buccal Films of Venlafaxine Hydrochloride

A.V. Yadav and M.N. Urade.....1213

ABSTRACT:

The purpose of this research was to develop and evaluate mucoadhesive buccal films containing Venlafaxine hydrochloride using Chitosan as base matrix. The buccal films were prepared by solvent casting technique. Different ratios of PVP K-30 were incorporated into the films to improve drug release properties of the films. The films were evaluated for their physical characteristics like weight, drug content, surface pH, swelling index, folding endurance, Ex Vivo mucoadhesion time, in Vitro drug release and FT-IR studies. Films exhibited sustained release over a period of 6 hours. The mechanism of drug release was found to be Non-fickian diffusion. Addition of PVP K-30 generally enhanced release rate. Films were having weight in the range of 146.67 ± 3.18 to 165.67 ± 2.6 mg. Swelling index was proportional to PVP K-30. Ex vivo mucoadhesion time was in the range of 142 to 287 minutes. The surface pH of all films was within limit (7.0), hence films would not cause irritation in the buccal cavity. Results indicate that these buccal films are adequate for the systemic delivery of venlafaxine hydrochloride.

KEYWORDS: Buccal films, Chitosan, Venlafaxine hydrochloride, PVP K-30.

Simultaneous Estimation of Amlodipine Besylate and Telmisartan by UV- Spectrophotometry

Hiresh K. Golher and S. Pillai.....1218

ABSTRACT:

Three simple, accurate, economic, precise and reproducible spectrophotometric methods are developed for simultaneous estimation of telmisartan and amlodipine besylate in combined tablet dosage form. First developed method involves formation and solving of simultaneous equation at 297.0 nm for estimation of telmisartan and amlodipine besylate is estimated from the calibration curve at 362.0 nm. Second developed method makes use absorbance ratio method using 324.0 nm as isobestic point. Third developed method is based on first derivative spectroscopy using 236.0 nm as zero crossing point. Methanol and 0.1 N sodium hydroxide in the ratio 5:5 was used

as solvent for all three methods. All the developed methods obey Beer's law in the concentration ranges employed for the respective methods. The results of analysis were validated statistically and by recovery studies.

KEYWORDS: Simultaneous spectrophotometric analysis, telmisartan, amlodipine besylate.

Spectrophotometric Estimation of Acebrophylline in Bulk and Capsule Formulation

D. Saraswathi, J. Priyadharisini, Ajithadas Aruna and A. Jerad Suresh.....1222

ABSTRACT:

Two simple, sensitive and accurate spectrophotometric methods have been developed for the estimation of Acebrophylline in bulk and in pharmaceutical formulations (Method A & Method B). Method A is based on the formation of red colored chromogen with ferric chloride in the presence of 1,10-phenanthroline and it obeys beer's law in the concentration ranging from 10-60µg/ml and exhibiting maximum absorption at 510nm. Method B is based on the formation of bluish green colored chromogen with ferric chloride in the presence of potassium ferricyanide and it obeys beer's law in the concentration ranging from 5-40µg/ml and exhibiting maximum absorption at 765nm. The methods were extended to capsule formulation and there was no interference from excipients and diluents. These methods have been statistically validated and are found to be precise and accurate.

KEYWORDS: Acebrophylline (ACE), ferric chloride, 1,10-phenanthroline, potassium ferricyanide.

In -Vitro Anthelmintic Activity of Roots of Abrus precatorius. Linn against Pheretima posthuma.

Ganesh H Wadkar, Sandeep R Kane, Dipak P Mali, Shrinivas K Mohite, Sunil S. Mathapati and Sunil V. Deshpande.....1224

ABSTRACT:

The present study was undertaken to evaluate anthelmintic activity of leaves of Abrus Precatorius Linn (Family - Fabacea) and its methanolic and aqueous extract against *Pheretima posthuma*. at Various concentrations (10-50 mg/ml) of methanolic and aqueous extracts were evaluated in the bioassay involving determination of time of paralysis (P) and time of death (D) of the worms. Piperazine citrate was used as standard anthelmintic drug and distilled water was used as control. The results of present study indicated that the methanolic and aqueous extract significantly exhibited paralysis (P<0.01) in worms in doses (10, 25and 50 mg/ml) and also caused death of worms especially at higher concentration of 50 mg/ml, as compared to standard drug.

KEYWORDS: Anthelmintic, Abrus Precatorius, *Pheretima posthuma*, Piperazine citrate.

HPLC Method Development for Telmisartan and Amlodipine

A.R. Chabukswar, S.C. Jagdale, S.V. Kumbhar, D.J. Desai, B.S. Kuchekar, P.D. Lokhande.....1227

ABSTRACT:

A simple, rapid, and precise method is developed for the quantitative simultaneous estimation of telmisartan and amlodipine in combined pharmaceutical dosage form. A chromatographic separation of the two drugs was achieved with a Kromasil C18 (250 mm×4.6 mm, 5µm) column using Acetonitrile: Methanol: Triethylamine buffer, PH 5.0 adjusted with O-Phosphoric acid. The instrumental settings are flow rate of 1.5 mL/min, and detector wavelength of 237 nm using a variable wavelength detector. The resolution between amlodipine and telmisartan were found to be more than 5. Theoretical plates for amlodipine and telmisartan were 10547 and 6313. Tailing factor for amlodipine and telmisartan was 1.85 and 1.48. The described method shows excellent linearity over a range of 320–480 µg/ml for telmisartan and 50-60 µg/ml for amlodipine. The correlation coefficient for telmisartan and amlodipine are 0.9999. The relative standard deviation for six measurements in two sets of each drug in tablets was always less than 2%. The proposed method was found to be suitable and accurate for quantitative determination of telmisartan and amlodipine in pharmaceutical preparations.

KEYWORDS: High Performance liquid chromatography, Method validation, Pharmaceutical preparation, amlodipine and telmisartan.

Free Radical Scavenging Activity and Phytochemical Profiling of *Acalypha indica* Linn.

Jiby Elias, Rajesh MG, Anish NP, Shalu Sunny and Jayan N.....1231

ABSTRACT:

In vitro antioxidant activity and phytochemical profiling of the methanol extract of the aerial part of *Acalypha indica* Linn. (Family- Euphorbiaceae) were investigated. Extract showed the presence of phytoconstituents such as alkaloids, saponins, quinines, anthroquinones, tannins, resins, glycosides, reducing sugars, carbohydrates, volatile oils and phenolics. However, coumarins and terpenoids were absent. TLC of the extract on Silicagel 60 F₂₅₄ pre-coated TLC plate using Hexane: Chloroform: Methanol (3:5:0.2) as mobile phase, showed four spots (R_f: 0.13, 0.31, 0.76, 0.90) under visible light and on exposure to iodine vapour, six spots (R_f: 0.13, 0.31, 0.43, 0.46, 0.79, 0.90) were observed. Total phenolic content of the extract was 18.2mg/g. Total reducing power of the extract increased with increasing concentration which indicated that the plant has inherent antioxidant potential. The extract at a concentration of 250µg/ml showed maximum activity of 2, 2-diphenyl- 2- picryl-hydrazyl (DPPH) (81.15%) followed by nitric oxide (75.51%), hydroxyl (72.30%) and superoxide (71.14%) radicals. The half inhibition concentration (IC₅₀) of DPPH, nitric oxide, hydroxyl and superoxide radicals were 28µg/ml, 23µg/ml, 45µg/ml and 48µg/ml respectively. The findings suggest that the methanol extract of *A. indica* possesses significant free radical scavenging activities in different *in vitro* models and could be a potent source of natural antioxidants.

KEYWORDS: Antioxidant activity, reducing power, DPPH, phenol

Synthesis and Antimicrobial Activity of Some Benzothiazolyl Pyrazolone Derivatives

Ameya G. Yadav, Vrushali N. Patil, S.V. Athlekar, A.S. Bobade, L.S. Patil and Abhay Chowdhary.....1235

ABSTRACT:

A series of 2-(1H-Benzothiazol-2-ylmercapto/amino)-N-[1,5-dimethyl-2-(substituted phenyl)-3-oxo-2,3-dihydro-1H-pyrazol-4-yl] acyl amines (**5a-o**) have been synthesized. These structures are determined by the elemental analyses and spectral data (IR, ¹H-NMR). These new derivatives are evaluated for *in vitro* antimicrobial activity against *Staphylococcus aureus* ATCC 3750, *Salmonella typhi* NCTC 786, *Candida albicans* ATCC 10231 and *Aspergillus niger* ATCC 16404.

KEYWORDS: Amino benzothiazole, anti-bacterial, anti-fungal, Mercapto benzothiazole, Pyrazolone.

Phytochemical Screening and Antiinsect Activity of *Achras sapota* Seeds Linn. Sp.PI.

Killedar SG and Devekar BP.....1238

ABSTRACT:

A study was carried out under laboratory condition to evaluate insect repellent and insecticidal activity of acetone extract of *Achras sapota* seeds using red flour beetle, *Tribolium castaneum* (Herbst) as test insects. Minimum concentrations for repellent and insecticidal activities were determined and found to be 5% after 5h and 5mg after 24h respectively. Optimum concentrations were determined for the best results which were found to be 20 mg % giving 92.6 ± 2.3 repellency over 5 h and 13 mg showing 100% insecticidal activity over 24 h respectively. Acetone extract was further screened for phytochemical screening and showed the presence of triterpens, saponins, tannins and flavanoids which are responsible for the above said activities.

KEYWORDS: Insecticidal activity, Phytochemical screening, *Tribolium castaneum*,.

Development and Characterization of Chitosan Nanoparticles and Improvement of Oral Bioavailability of Poorly Water Soluble Acyclovir

Kishore Uttam Kothule, Prashant Kesharwani, Suresh Kumar Gidwani and Paraag Gide.....1241

ABSTRACT:

The purpose of the present investigation is to develop and characterize chitosan nanoparticles through ionic gelation method and to improve oral bioavailability of poorly water soluble acyclovir drug by incorporating into nanoparticles. Nanoparticles formulation were synthesized, and characterized by scanning electron microscopy (SEM), zeta potential etc. Further Nanoparticles formulation was evaluated for *In vitro* drug release studies and Stability study as per ICH guidelines. Formulation FM-1 showed maximum cumulative percent drug release and formulation FM-5 showed minimum cumulative percent drug release after 8 hours *in-vitro* drug release studies. Finally curve fitting into various mathematical models was found to be average and the *in-vitro* release of formulations best fitted into zero order release and Higuchi's model followed by the Peppas model. This indicates the nanoparticles followed Fickian controlled release mechanism.

KEYWORDS: Nanoparticles, Acyclovir, Chitosan.

Formulation of Rapidly Disintegrating Fast Dissolving Diazepam Tablets Using Solid Dispersions through a Statistical Approach

Tapan Kumar Giri and Biswanath Sa.....1246

ABSTRACT:

This study present development of diazepam tablet, which can provide rapid disintegration of the tablet as well as rapid release of the drug in the oral cavity. The tablets were prepared by direct compression method using solid dispersion of the drug with polyethylene glycol and/or sodium lauryl sulphate as solid dispersion to increase aqueous solubility and dissolution of drug. A 2³ factorial design was used to limit the number of experimental trials and to optimize the formulations which disintegrate rapidly and release the drug immediately. Out of the eight formulations five formulations complied the criteria of rapidly disintegrating fast dissolving tablets. The optimum formulation was found to disintegrate in 26.12 seconds and released 85% of the drug in 10.13 minutes. This study indicates that rapidly disintegrating fast dissolving tablet can be prepared by the conventional direct compression method utilizing the existing infrastructure of tablet manufacturing and could provide rapid absorption of drug by quick disintegration of the tablet and rapid release of the drug in the oral cavity for emergency treatment of seizure.

KEYWORDS: Diazepam, Rapidly disintegrating, Solid dispersion, Factorial design.

Formulation and Development of Gastric Floating Drug Delivery Systems of Simvastatin

Abdul Sayeed, Sheshgiri Gada and Mallikarjun B. Kinagi.....1252

ABSTRACT:

The present study in the development of Hydrodynamically Balanced Systems (HBS) of Simvastatin an hypolipidemic drug which are designed to increase the gastric residence time, thus prolonging the drug release. Hydroxy propyl methyl cellulose (HPMC) of different viscosity grades at three different drugs to polymer ratios were used to prepare HBS by direct compression technique. The prepared HBS tablets were evaluated in terms of their pre-compression parameters, post-compression parameters and short term stability studies. The drug polymer ratio, viscosity grades of HPMC, different diluents and gas generating agents were found to influence the drug release and floating properties of the prepared HBS. The floating properties and drug release characteristics were determined for the prepared HBS in 0.1 N HCl dissolution media. All the HBS formulations showed good *invitro* floating properties with an optimum concentration of gas generating agents sodium bicarbonate and citric acid. The rate of drug release decreased with increased polymer concentration. It was found that HPMC viscosity had significant impact on the drug release from the prepared HBS. Among the three viscosity grades of HPMC (K4M, K15M, K100M), HPMC K4M along with lactose as diluents was found to be beneficial in improving the drug release rate and floating properties The short term stability study indicated that there was no much differences observed.

KEYWORDS: Simvastatin, Hydrodynamically Balanced Systems, Hydroxy Propyl Methyl Cellulose, *Invitro* floating.

Formulation and Evaluation of Effervescent Floating Tablet of Domperidone Maleate

Nikhil M. Mahajan, Pravin D. Telgote, Nitin A. Chandekar, Santosh G. Shep, Atish R. Sawant, C.K. Gadewar and A.V. Chandewar.....1260

ABSTRACT:

Domperidone Maleate has peripheral dopamine receptor blocking properties. It is used in the treatment of vomiting. Domperidone Maleate effervescent floating tablets were developed in ten different formulations (B1 to B10) by employing different grades of polymers and effervescent agents such as sodium bicarbonate and citric acid. The formulations were evaluated for various physical parameters, buoyancy studies, dissolution studies, dissolution parameters and drug released mechanisms. B10 formulation showed maximum floating time of 24 hours and gave slow and maximum drug release of Domperidone Maleate spread over 24 hours. Finally the tablet formulations found to be economical and may overcome the drawbacks associated with the drug during its absorption.

KEYWORDS: Domperidone Maleate, Effervescent floating tablet, Buoyancy.

Formulation and Characterization of Ofloxacin Microspheres Prepared By Iontropic Gelation Technique

M. Purushothaman, Sowjanya Battu, K. Jyothshna Devi, C. Madhusudhana Chetty, M. Alagusundaram and K. Mallikarjuna Rao.....1265

ABSTRACT:

The main aim of the present study was to formulate ofloxacin microspheres by Iontropic gelation technique using various polymers such as carbopol grades 934 and 940, sodium carboxy methyl cellulose (SCMC) and sodium alginate. Where 10 % calcium chloride is used as a cross linking agent to form a discrete microspheres with sodium alginate. The prepared ofloxacin microspheres were evaluated for its Particle size and shape analysis, flow properties, micromeritic properties, drug entrapment efficiency, drug content, *in vitro* drug release studies. The prepared microsphere were bulky, free flowing, spherical and showed an drug entrapment ranging between 60 – 80 % and had a mean particle size ranging from 120 – 380 μm as determined by the optical microscopy and SEM analysis. The *in vitro* release of the drug from the polymer coated microspheres had shown controlled and sustained drug delivery more than 12 h. The *in vitro* release data were fit to different equations and kinetic models to explain release profiles. The kinetic models used were zero order, Higuchi's and Peppas's. The correlation coefficient value (*r*) indicates that the kinetic of drug release was zero to first order and the mechanism of drug release follows super case II transport. Based upon the evaluation parameters results the formulation F3 showed the best controlled release than the other formulations.

KEYWORDS: Ofloxacin, Ionic gelation technique, Carbopol 940, Sodium alginate zero order.

Development and Evaluation of Colon Targeted Tablets of Praziquantel and its β -Cyclodextrin Complex for the Treatment of Schistosomiasis

G. Kishore, Somashekar Shyale, K. Srikanth and V.R.M. Gupta.....1270

ABSTRACT:

The present investigation was planned to formulate colon targeted tablets of praziquantel using xanthan gum and guar gum as matrix carriers. Also, it was planned to improve the solubility of praziquantel by forming inclusion complex with β -CD. Different formulations were prepared by changing the concentrations of matrix carriers and β -CD. Initially, granules were prepared and evaluated for various rheological properties like bulk density, true density, compressibility index and angle of repose and for compression characteristics like hardness, thickness and disintegration time by using standard techniques. *In vitro* release was conducted for all the formulations in USP XXIV for 24 h in different pH resembling different portions of gastro intestinal tract. Formulations containing 40% w/w xanthan gum and guar gum showed maximum drug release in colonic environment. These formulations were made complex with β -CD. After complexation of praziquantel with β -CD, praziquantel dissolution is significantly increased in colonic environment. Stability studies at 40°C / 75 % RH was planned to be conducted for 90 days.

KEYWORDS: Schistosomiasis, Praziquantel, Colonic disorders, β -cyclodextrin, Targeted drug delivery.

Stress degradation monitoring of Ofloxacin by HPTLC and Bioautography.

A.D. Paprikar, K.P. Patil, S.S. Ranade, V.Y. Rane, S.H Rao and M.C. Damle.....1275

ABSTRACT:

A stability indicating High Performance Thin Layer Chromatographic [HPTLC] method was developed for the study of stability of the drug Ofloxacin. Bioautography was performed subsequently to compare the results by both the methods. The method employed TLC (Thin Layer Chromatography) aluminum plates pre-coated with silica gel 60 F₂₅₄ as the stationary phase. The samples were spotted on TLC plates (10cmx20cm) as 4 mm bands and developed with a mobile phase consisting of n-butanol AR: ethanol AR: ammonia solution AR (5:5:4 v:v:v). The R_f value for Ofloxacin was 0.53 ± 0.03. The drug was exposed to various stress conditions as per ICH guideline viz. acidic, alkaline, neutral hydrolysis, oxidation and photolysis after which the amount remaining was estimated. Densitometric analysis of Ofloxacin was carried out at 299nm. The linear regression analysis data for the area of the bands resulted in correlation coefficient $r^2 = 0.9859$ in the range of 500–2500 ng / band.

The same TLC plates were used to perform Bioautography in petri plates (10cm diameter) using Mueller Hinton agar as the media and *Escherichia coli* NCIM 2066 as the organism. The results by both the methods were compared. The drug does not undergo degradation with neutral hydrolysis and oxidative conditions, but gets affected in alkaline hydrolytic and acidic hydrolytic conditions. As the HPTLC method could effectively resolve the drug from its degradation products, it can be employed as a stability-indicating method.

KEYWORDS: Ofloxacin, stability- indicating HPTLC, Bioautography.

Studies of Sub-dermal Tissue Necrosis of Meloxicam Agar-Gelatin Implants

Rao K. Purushotham, Jaybhaye S. J, Anil Bhandari and Ravindra Kamble.....1279

ABSTRACT:

Meloxicam is the potential NSAID used in chronic diseases. The present research is an attempt for postoperative surgical care in designing 10 mg Meloxicam sustained release implants. The implants comprising plasticizer glycerin and the polymers like agar and gelatin with different ratios (60:40, 70:30 and 80:20 % w/w) were formulated using specially designed stainless steel extruder under aseptic conditions. The formulated Meloxicam subdermal implants were characterized to uniform drug content, weight, thickness, passes free formalin test, sterility test and *In vitro* release of Meloxicam. Subdermal implants which are treated with formaldehyde for 12 hours were found to be sustained release of drug for a period of 90 hours. *In vivo* studies in rabbits for polymer histopathically and compatible with surrounding tissue of subdermal region.

KEYWORDS: Meloxicam, Agar, Gelatin, Subdermal Implant

Evaluation of Wound Healing Activity of Bark Extract of *Artocarpus heterophyllus*

Dharmendra Raghuvanshi, Nilesh Gupta, U.K. Jain, A.S. Raghuvanshi and Ajay Patel.....1283

ABSTRACT:

The wound healing activity of methanolic Bark extract of *Artocarpus heterophyllus* lam evaluated on excision wound models, in albino mice, in the form of an ointment (5% W/W ointment of bark extract in simple ointment base) which is comparable with standard (Betadine) ointment. In the excision model, the period of epithelization, of the extract treated group was found to be higher than the control group and slightly lesser than standard treated group of animals' upto 16th post wounding day. Overall results of this study suggest that the extract possesses significant wound healing activity.

KEYWORDS: *Artocarpus heterophyllus*, Methanolic extract, Wound healing activity, Betadine.

Anti-fertility Activity of *Ficus bengalensis* Linn: Special Emphasis on Histoarchitecture Changes of Female Reproductive System of Rat

Pingle Shubhangi, Patil Mandakini, Duragkar Nandkishore, Bhongade Subhash, Nimbekar Tulsidas and Katolkar Parimal1285

ABSTRACT:

The main objective of the study has been to evaluate Antifertility Activity of methanolic extract of bark of *Ficus bengalensis* Linn. with special reference to ovarian, vaginal and uterine histoarchitecture of female reproductive system of rats. The study revealed that administration of methanolic extract of bark at a dose of 250 mg/kg body weight, consecutively for 21 days, showed modular histological changes in the structures of ovary and uterus. The ovarian follicle showed structural disparity in the ovarian cells and granulosa cells. The follicles were degenerated and dysfunctional. In the uterus, the endometrial glands were mere degenerated and dysfunctional. From this result, the bark extract of *Ficus bengalensis* would be serving as a tool for birth control.

KEYWORDS: Antifertility activity, Histoarchitecture changes, *Ficus bengalensis*, Estrous cycle, female reproductive system.

Formulation and Evaluation of Directly Compressible Dispersible Tablets of *Hingashtak churna*.

Mahale AM, Sakarkar DM, Wanare RS, Masirkar VJ, Mantri RH, Tayade AM and Jadhav JK1288

ABSTRACT:

Formulation of ayurvedic powder preparations into tablets may increase dosage uniformity. Application of direct compression method to ayurvedic preparations can be regarded as a major advance. In the present study, dispersible tablets of *Hingashtak churna* were prepared by direct compression method. *Hingashtak churna* was subjected to preformulation studies to test the suitability of direct compression method and appropriate formulations were developed. These formulations were further evaluated for hardness, friability, weight variation, uniformity of dispersion, disintegration test and stability studies. Attempts were made to get minimum possible disintegration time by varying the concentrations of sodium starch glycolate and starch. It was found that, use of mixture of both the disintegrating agents was highly useful in the formulation of dispersible tablets of . The study further *Hingashtak churna* revealed the usefulness of direct compression method to formulate dispersible tablets of ayurvedic preparations.

KEYWORDS: *Hingashtak churna*, constipation, anorexia, appetizer

Formulation Development and Evaluation of Metoprolol Succinate ER and Amlodipine Besilate Bilayer Tablet

R.Z. Mujoriya, Venkateshvarlu, D.C. Singh, V.A. Gupta, A Bisen and A.B. Bondre1291

ABSTRACT:

According to the (WHO), hypertension is the most common cardiovascular condition in the world and there are about 600 million people at risk for heart attack, stroke and cardiac failure. High BP is estimated to cause 7.1 million deaths, about 13 percent of the global fatality total. It is believed this number will grow to approximately 11million by the year 2020.

The Formulation of Metoprolol Succinate ER and Amlodipine Besilate were prepared by using different polymer (HPMC, Methocel, Carbapol) with different diluents (MCC, Cellulose Phosphate, Starch, Croscarmallose Sodium) and then evaluated. The experimental work was divided into preformulation studies, formulation development, and evaluation. Standardization of drug and excipients confirmed the authentication of the samples. Thus it can be concluded that a stable bilayer tablet of Metoprolol succinate ER and Amlodipine besilate can be prepared by using

HPMC K 15 M and carbomer as a polymer. It was found that the in vitro drug release of Metoprolol succinate ER was best explained by first order ($r^2 = 0.9994$), as the plots showed the highest linearity, followed by Higuchi's equation ($r^2 = 0.9974$) and zero-order ($r^2 = 0.9471$).

KEYWORDS: BP: Blood Pressure, ER: Extended Release, HPMC: Hydroxy Propyl Methyl Cellulose, MCC: Methyl Carboxy Cellulose.

Development, Characterization and Evaluation of Niosomes and Liposomes of Bacitracin Zinc.

Derle D.V., Kasliwal N.H., Gandhi P.P. and Yeole D.R.1295

ABSTRACT:

The skin permeation of antibacterial agent, bacitracin zinc, in liposomes and niosomes, after topical application, were elucidated in the present study with aimed to increase its penetration capacity hence efficiency. The formulations of bacitracin zinc were prepared and characterized for vesicle size, entrapment efficiency, and drug permeation across rat skin and were evaluated for their stability. Formulation with niosomes demonstrated a better skin permeation potential, sustained release characteristics and higher stability as compared to liposomes. The ability of liposomes and niosomes to modulate drug delivery makes the two vesicles useful to formulate topical bacitracin zinc.

KEYWORDS: Bacitracin zinc, Liposomes, Niosomes, Skin permeation

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