

CONTENT**REVIEW ARTICLE**

- **Biocatalysis: A Brief Review**
Anna Pratima Nikalje, Amogh C. Tathe and Mangesh S. Ghodke..... 1355
- **Various Methods for Synthesis of Purine Analogues**
Sachan Dinesh, Pandeya S.N. and Pathak A.K...... 1361

RESEARCH ARTICLE

- **Study of Quinoid Derivatives of Allylamine Polymerization**
E.E. Ergozhin, B.A. Mukhitdinova, A.I. Nikitina and N.I. Razuvaeva..... 1366
- **Method Development and Validation for Simultaneous Estimation of Metamizole Sodium and Pitofenone HCl by a Stability Indicating RP-HPLC.**
R. Vijayalakshmi and S. Anbazhagan..... 1371
- **Synthesis and Hydrolysis of Phosphoric Diamide without Seeking C-N-P Protonation by Acid**
Nitesh Goswami and Shashi Prabha..... 1378
- **Stability-Indicating Validated HPTLC Method for Simultaneous Estimation of Atazanavir Sulfate and Ritonavir in Pharmaceutical Dosage Form.**
R.K. Nanda, Pradeep B. Yadav, and A.A. Kulkarni..... 1381
- **3D-QSAR analysis of some HIV Reserve Transcriptase Inhibitors**
Arun Kashid and Sashikant Dhawale..... 1385
- **Extractive Spectrophotometric Determination of Mianserin Hydrochloride by Acid-Dye Complexation Method in Pure and In Pharmaceutical Preparations.**
Rabie S. Farag, Mahamoud S. Afifi and Mahmoud M. Abd-Rabow..... 1388
- **Development and Validation of Stability Indicating High-Performance Liquid Chromatographic Method for Determination of Pramipexole in Solid Dosage Forms.**
Mayur G. Raval, Preeti Tiwari and C.N. Patel..... 1393
- **Simultaneous Second Order Derivative Spectrophotometric Determination of Mercury and Cobalt Using Furfuraldehyde Thiosemicarbazone (FFTSC)**
V. Veeranna and V. Suryanarayana Rao..... 1398
- **Corrosion Inhibitors for Acidization of Petroleum Oil Well**
M. Yadav and Usha Sharma..... 1404
- **An efficient solvent free synthesis of meso-substituted dipyrromethanes from lowest pyrrole/aldehyde ratio on grinding**
Kabeer A. Shaikh and Vishal A. Patil..... 1408
- **Antioxidant Properties of *Gongronema latifolia***
Njoku Obioma U., Joshua Parker Elijah and Okonkwo Chukwudi C...... 1411
- **Composition and Characterization of Refined Oil Compared with Its Crude Oil from Waste Obtained from *Mangifera indica***
Saiprabha M. Mahale and A. S. Goswami-Giri..... 1415
- **Spectrophotometric Determination of Rosiglitazone in Pure form and in Pharmaceutical formulations**
K. Purushotham Naidu and N.V.S. Naidu..... 1420
- **A Simple and Sensitive RP-HPLC Method for Estimation of Trandolapril in Bulk and Tablet Dosage Forms**
V. Bhaskara Raju and A. Lakshmana Rao..... 1425

●	Synergistic Effect of Antifungal Activity of Medicinal Plants with Transition Metal Ferrocyanides	
	<i>Dipti Bharti and Charu Arora.....</i>	<i>1428</i>
●	Removal of Heavy Metals from Water/ Wastewater Using Agricultural and Industrial By-Products as Adsorbents.	
	<i>Divyanshi Sharma.....</i>	<i>1432</i>
●	Spectrophotometric Method for Simultaneous Estimation of Desloratadine and Pseudoephedrine Hydrochloride from Tablets and Dissolution Media	
	<i>Sachin U. Kushare, Mahantesh Mali, Atul Phatak and Praveen D. Chaudhari.....</i>	<i>1440</i>
●	A Novel Ion-Selective Electrode Based on Pyrole--Carboxaldehyde-Semicarbazide for Potentiometric Determination of Ca (II) Ions	
	<i>Kussum Sharma and Monika Rangi.....</i>	<i>1444</i>
●	Preparation and Characterization of Doped Ceria Nano Particles by Chemical Precipitation	
	<i>Devi Radhika and A. Samson Nesaraj.....</i>	<i>1447</i>
●	Antibacterial, Anthelmintic, Analgesic and Anti-Inflammatory Activity of Conventional and Microwave Assisted Synthesized -(Substituted)--Phenylquinazolin-(h)-One.	
	<i>Subal Debnath and S.Y. Manjunath.....</i>	<i>1453</i>
●	Solvent Polarity Based Microwave Assisted Extraction of Ferulic Acid from Whole Plant of <i>Cynodon dactylon</i> (L.) And It's Quantitative Determination by Developed and Validated HPTLC Method	
	<i>Subash Chandra Verma., Sukriti Nigam, Chhoten Lal Jain, Pramila Pant, Madan Mohan Padhi and Ramesh Babu Devalla....</i>	<i>1460</i>
●	Validation and Application of a High-Performance Liquid Chromatography Method for Estimation of Sitagliptin Phosphate from Bulk Drug and Pharmaceutical Formulation	
	<i>Maste M.M., Parate A.N. and Bhat A.R.....</i>	<i>1466</i>
●	<i>Azadirachta indica</i> Leaves as Green Inhibitor for Brass in Natural Sea Water Environment	
	<i>P. Deepa Rani and S. Selvaraj.....</i>	<i>1469</i>
●	Melon (<i>Citrullus lanatus</i>) Seed Oil a Potential Source for Biodiesel Production	
	<i>Ossai Emmanuel C., Ogbonna Dominic C. and Njoku Obi U.....</i>	<i>1474</i>
●	Spectrophotometric Determination of Cefditoren Pivoxil by Diazotization Coupling Reaction in Solid Dosage Forms	
	<i>Arvind B. Karadi, S. Appal Raju, Shobha Manjunath and Venugopal Darak.....</i>	<i>1478</i>
●	Evaluation of Nitric Oxide Scavenging Activity of <i>Rumex vesicarius</i> L.	
	<i>Palani Samy Hari Prasad and N. Ramakrishnan.....</i>	<i>1482</i>
●	Synthesis and Evaluation of antioxidant and anti-inflammatory activity of Conjugates of Amino Acids with N-Aroyl- N, N'-Dicyclohexyl Urea	
	<i>Shakti Prasanna Sahoo, Bharat Bhusan Subudhi and Rachana Swain.....</i>	<i>1485</i>
●	Sensitive Extractive Simpler Spectrophotometric Methods for the Microdetermination of Diltiazem HCl and Pipazethate HCl in Pure and Tablet Dosage Forms	
	<i>Ali M. Hassan, Ahmed F. El-Asmy and Yasser B. Abd El-Raheem.....</i>	<i>1489</i>
●	Instruction to author.....	1503

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Abstract

REVIEW ARTICLE

Biocatalysis: A Brief Review

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ABSTRACT:

Bio catalysis underpins some of the oldest chemical transformations known to humans. Biocatalysis is the use of natural catalysts, such as protein enzymes to perform chemical transformations on organic compounds. Both enzymes that have been more or less isolated and enzymes still residing inside living cells are employed for this task. More than one hundred years ago, bio catalysis was employed to do chemical transformations on non-natural man-made organic compounds and the last 30 years have seen a substantial increase in the application of bio catalysis to produce fine chemicals, especially for the pharmaceutical industry. Here the author emphasizes on the various application of biocatalysts useful in the pharmaceutical industry.

KEYWORDS: Biocatalysis, Enzyme, Enzyme synthesis

Various Methods for Synthesis of Purine Analogues

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ABSTRACT:

The purine analogues are new class of nonclassical antimicrobial agents that binds with riboswitches. Purine (adenine) analogues are having antimicrobial, antifungal, antitumour, antiproliferative, antiviral and activity against HSV-1. Riboswitches are structured RNA domains that can bind directly to specific ligands and regulate gene expression. These RNA elements are located most commonly within the non-coding regions of bacterial mRNAs, because these genes were involved in fundamental metabolic pathways in certain bacterial pathogens. Purine-binding riboswitches may be targets for the development of novel antimicrobial agents. Designed compounds are bound by a purine riboswitches aptamer in vitro with affinities comparable to that of the natural ligand, and several also inhibit microbial growth.

KEYWORDS: Purines, Synthesis

RESEARCH ARTICLE

Study of Quinoid Derivatives of Allylamine Polymerization

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ABSTRACT:

We have studied radical and cationic initiation of monomers on the basis of quinoid derivatives of allylamine by the method of polarography, and developed optimum conditions of synthesis of polymers, and studied their structure and the basic properties.

KEYWORDS: allylamine, benzoquinone, polarography, polymerization, kinetic

Method Development and Validation for Simultaneous Estimation of Metamizole Sodium and Pitofenone HCl by a Stability Indicating RP-HPLC.

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ABSTRACT:

A simple, selective, rapid and precise RP-HPLC has been developed for the simultaneous estimation of Metamizole sodium and Pitofenone HCl in presence of Fenpiverinium bromide of combined Pharmaceutical dosage forms. The Inertsil ODS 3V C-18 Column was used for Metamizole sodium and Pitofenone HCL separation. The Mobile phase used was sodium dihydrogen phosphate buffer : Methanol,(0.05M, pH 5.0), (53:47 v/v) at a flow rate of 1ml/min at 286nm. The calibration curves was linear at a concentration range of 700.90 µg/ml to 1301.73 µg/ml and 7.01µg/ml to 13.01µg/ml with its regression coefficient ($r^2=0.9992$ and 0.9995) for Metamizole sodium and Pitofenone HCl respectively was obtained. The LOD and LOQ was found to be in the range of 21.6174 µg/ml and 65.507 µg/ml for Metamizole sodium and 0.1701µg/ml and 0.5155 µg/ml for Pitofenone HCl respectively. The method is highly sensitive and successfully applied for determination of Metamizole sodium and Fenpiverinium bromide in tablet dosage forms.

KEYWORDS: Metamizole sodium, Pitofenone HCl, Reverse phase High performance liquid chromatography.

Synthesis and Hydrolysis of Phosphoric Diamide without Seeking C-N-P Protonation by Acid

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ABSTRACT:

Phosphoric bis-(o-Methoxyphenyl amide) chloride, a C-N-P containing ester, on kinetic examination exhibited a rate maximum (via the Neutral form only) at 4.0 M-HCl and gave second-order kinetic rate coefficients during hydrolysis in the acid range, 0.01-7.0M HCl at $40(\pm 0.5)^{\circ}\text{C}$. In the low acid range Zwitterionic species while in the higher acid range the undissociated form have been assessed as the major contributory reactive forms, undergoing bimolecular (Arrhenius Parameters) hydrolysis with P-N bond fission, The synthesis of the bis-amide was possible by the phosphorylation procedure and identification of the product was achieved by elemental analysis, and ³¹P NMR study in particular.

KEYWORDS: Phosphoric bis-amide, Undissociated form, Hydrolysis, Synthesis

Stability-Indicating Validated HPTLC Method for Simultaneous Estimation of Atazanavir Sulfate and Ritonavir in Pharmaceutical Dosage Form.

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ABSTRACT:

A high-performance thin layer chromatography (HPTLC) method for Atazanavir Sulfate (ATV) and Ritonavir (RTV) was developed in the present work. The mobile phase selected was Ethyl acetate: Toluene: methanol (7.5: 2: 0.5 v/v/v) with UV detection at 234 nm. The standard solution ranging from 1000-7000ng/band was applied for ATV and standard solution ranging from 500-3500ng/band was applied for RTV. Linearity was observed in this concentration range on precoated silica gel 60 F₂₅₄ TLC plate in the form of bands with 100 µl sample syringe using automatic sample applicator LINOMAT V. After development, plate was immediately dried and was observed under UV chamber. The well resolved bands of drugs were scanned with Camag TLC scanner III densitometer controlled by WINCAT's software version 4. Retention factor for ATV and RTV were found to be 0.76 ± 0.95 and

0.54 ± 1.43 respectively. Drugs were subjected to oxidation, acid hydrolysis, base hydrolysis and sun light to apply stress condition for degradation studies. Results of analysis were validated statistically and by recovery studies.

KEYWORDS: Atazanavir Sulfate, Ritonavir, and HPTLC.

3D-QSAR analysis of some HIV Reserve Transcriptase Inhibitors

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ABSTRACT:

In recent years the mortality rate in human being is increased rapidly and the HIV infection is major cause of it. HIV virus is a complex virus with continuously changing genetic makeup. The different enzymatic systems in HIV are now becoming target for drug action. In present communication we deals with the 3D QSAR analysis of some reported HIV *Reverse Transcriptase* inhibitors.

KEYWORDS: 3D QSAR, HIV *Reverse Transcriptase* inhibitors,

Extractive Spectrophotometric Determination of Mianserin Hydrochloride by Acid-Dye Complexation Method in Pure and In Pharmaceutical Preparations.

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ABSTRACT:

A simple and sensitive extractive spectrophotometric method has been described for the assay of Mianserin hydrochloride (M-HCl) either in pure form or in pharmaceutical solid dosage form. The developed method involves formation of colored chloroform extractable ion-association complex of Mianserin hydrochloride (M-HCl) with Picric acid (PA), Chlorophenol red (CIPR), Bromthymol blue (BrTB), Bromcresol purple (BrCP) reagents. The extracted complexes showed absorbance maxima at optimum wavelength using visible spectrophotometer. Beer's law is obeyed in the concentration range of 1-42 µg/mL. Correlation coefficient was found to be ≥ 0.9985. In addition we have determined the molar absorptivity, Sandell sensitivity and the optimum conditions for quantitative analysis of the investigated drugs.

KEYWORDS: Spectrophotometry, Mianserin hydrochloride, chloroform, pharmaceutical analysis, Ion-association complex.

Development and Validation of Stability Indicating High-Performance Liquid Chromatographic Method for Determination of Pramipexole in Solid Dosage Forms.

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ABSTRACT:

The Objective Of the current study was to develop a validated stability indicating high performance liquid chromatographic method for Pramipexole in solid dosage form. The method was validated by subjecting the drugs to forced decomposition under hydrolysis, Oxidation, photolysis, and thermal stress conditions prescribed in international Conference on Harmonization. The drug was successfully separated from major and minor degradation products on a reversed –phase Zorbex SB CN column by using Tri Ethyl Amine buffer (PH 7): Methanol (65:35%V/V) as the mobile phase with determination at 263 nm. The flow rate was 1 ml/min. The method was validated with respect to linearity, precision, accuracy, robustness. The response was linear over the range of 2-24 for Pramipexole. The recovery of the drugs from a mixture product was in the range of 99.60-101.84%. The utility of the procedure was verified by its application to marketed formulations that were subjected to accelerated stability studies.

KEYWORDS: Pramipexole, Stability Assay, High performance liquid chromatography, Validation, Mirapex.

Simultaneous Second Order Derivative Spectrophotometric Determination of Mercury and Cobalt Using Furfuraldehyde Thiosemicarbazone (FFTSC)

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ABSTRACT:

A simple, selective and sensitive second order derivative spectrophotometric method is developed using FFTSC (furfuraldehyde thiosemicarbazone) for the simultaneous determination of Hg(II) and Co(II). The reagent FFTSC gives yellow colour with Hg(II) and Co(II) mixture solution in basic medium. The maximum peaks were observed in between 360nm - 420nm for both Hg(II) and Co(II) in basic buffer solution of pH 8.5. The molar absorptivity and sandell's sensitivity of Hg(II) and Co(II)-FFTSC complexes are 2.2×10^4 L/mol/cm, 4.3×10^3 L/mol/cm and $0.000454 \mu\text{g}/\text{cm}^2$, $0.00232 \mu\text{g}/\text{cm}^2$ respectively. The stability constant of Hg(II) and Co(II)-FFTSC complexes are 3.495×10^6 and 5.176×10^4 respectively. The effect of concentrations of Hg(II) and Co(II) ions on amplitude are also studied. The samples of tap water, distilled water, human tissues and blood samples were analyzed by the proposed method. The results of the samples are good agreement with the certified reference values APARI, CVAAT and AAS methods.

KEYWORDS: FFTSC; Simultaneous spectrophotometry; Mercury (II); Cobalt (II);

Corrosion Inhibitors for Acidization of Petroleum Oil Well

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ABSTRACT:

An important method of protecting metallic materials against deterioration due to corrosion is by the use of corrosion inhibitors. In the present investigation, corrosion inhibition study of two imidazoline derivatives, 1-(2-hydroxy ethyl)-2-methylimidazoline (Inh I) and 1-(2-hydroxyethyl)-2-decylimidazoline (Inh II) have been performed for oil-well tubular steel (N-80) in 15% HCl using weight loss, electrochemical polarization and SEM techniques. The inhibition efficiencies of the inhibitors follow the sequence, Inh II > Inh I. The results showed that inhibition efficiency of both the inhibitors increased with increase in inhibitors concentration. Both inhibitors act as mixed inhibitors and obey the Langmuir adsorption isotherm. Corrosion inhibition mechanism take place through adsorption phenomenon.

KEYWORDS: Imidazoline derivatives ; N80 steel; 15% HCl ; Corrosion inhibition

An efficient solvent free synthesis of meso-substituted dipyrromethanes from lowest pyrrole/aldehyde ratio on grinding

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ABSTRACT:

An efficient and simple methodology has been developed under solvent free condition for the quantitative synthesis of meso-substituted dipyrromethanes from lowest pyrrole/aldehyde ratio. The method was carried out by using I_2 as a catalyst. The method is environmentally friendly, easy to workup, and gives excellent yield of the products.

KEYWORDS: Pyrrole, Aldehyde, Dipyrromethanes, Iodine, Solvent free.

Antioxidant Properties of *Gongronema latifolia*

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ABSTRACT:

Gongronema latifolia (Utazi) is a plant found in the tropical regions of West Africa. The phytochemical analysis and the antioxidant activities of *Gongronema latifolia* were investigated. The acute toxicity of the plant was found to be 2450mg/kg body weight, indicating that the plant is safe for consumption. The ethanol extract of the plant gave a yield of 17.94%. The phytochemical analysis on the leaves extract revealed the presence of saponins, tannins, resins, carbohydrates, proteins, fats and oils, steroids, and terpenoids with higher levels of flavonoids and alkaloids. The antioxidant properties of ethanol extract of the plant were evaluated *in vitro* with rat liver homogenate. The ethanol extract of the plant showed a significant inhibition with nitric oxide, ferrous sulphate and carbon tetrachloride induced lipid peroxidation activities which were comparable with ascorbic acid. The inhibition was found to be concentration dependent. From this study, it was found that the plant is a potent scavenger of free radicals and can ameliorate the effects of oxidative stress which have been implicated in most pathological conditions.

KEYWORDS: *Gongronema latifolia*; Antioxidant; Free Radicals; Peroxidation.

Composition and Characterization of Refined Oil Compared with Its Crude Oil from Waste Obtained from *Mangifera indica*

Saiprabha M. Mahale and A. S. Goswami-Giri*.....1415

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ABSTRACT:

Crude and refined seed kernel oil was extracted from *Alphanso* mango aiming the study of physico-chemical properties. The oil produced was refined through degumming, neutralization and bleaching process using local adsorbent (activated clay). The specific gravity, refractive index, acid value, saponification value and iodine value for both crude and refined mango seed kernel oil was determined. The solid form refined mango kernel fat resembles cocoa butter when compared with physical and chemical characteristics. They both are thus, used as a substitute for each other or just as extenders. Mango Fat can be used as edible oil apart from its general uses in manufacturing soap, cosmetic formulations and industrial applications.

KEYWORDS: seed kernel, mango, oil, soxhlet extraction, refining, degumming, bleaching etc.

Spectrophotometric Determination of Rosiglitazone in Pure form and in Pharmaceutical formulations

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ABSTRACT:

Two simple, rapid and sensitive spectrophotometric methods were developed for the determination of Rosiglitazone either in raw material or in Pharmaceutical formulations. Method A is based on the extraction of Rosiglitazone by Fe^{3+} in acidic medium, and the subsequent interaction of iron (III) with ferricyanide to form prussian blue with the product exhibiting an absorption maximum at 728 nm. Method B is based on the oxidation of Rosiglitazone by Fe^{3+} in presence of orthophosphoric acid was demonstrated at 522 nm with 2, 2'- bipyridyl. The analytical parameters and their effects on the reported systems are investigated. Beer's law was obeyed in the concentration range 5 – 50 $\mu g ml^{-1}$ and 2 – 20 $\mu g ml^{-1}$ with correlation coefficient 0.995 and 0.997 for Method A and B respectively. The molar absorptivity, sandell's sensitivity, detection and quantification limits were also calculated. The proposed methods have been applied successfully for the analysis of the studied drugs in pure and pharmaceutical formulations with percentage recoveries range from 99.30 to 100.08. The results were in good agreement with those obtained by the official methods.

KEYWORDS: Spectrophotometry, Potassiumferricyanide, 2, 2' – Bipyridyl, Ferric chloride, Formulations

A Simple and Sensitive RP-HPLC Method for Estimation of Trandolapril in Bulk and Tablet Dosage Forms

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²V.V. Institute of Pharmaceutical Sciences, Gudlavalleru- 521 356, A.P., India.

ABSTRACT:

An accurate and precise HPLC method was developed for the determination of trandolapril. Separation of the drug was achieved on a reverse phase C₁₈ column using a mobile phase consisting of phosphate buffer and acetonitrile in the ratio of 35:65 v/v. The flow rate was 0.8 ml/min and the detection wavelength was 210 nm. The linearity was observed in the range of 20-60 µg/ml with a correlation coefficient of 0.999. The proposed method was validated for its linearity, accuracy, precision and robustness. This method can be employed for routine quality control analysis of trandolapril in tablet dosage forms.

KEYWORDS: Trandolapril, Estimation, RP-HPLC, Validation, Tablets.

Synergistic Effect of Antifungal Activity of Medicinal Plants with Transition Metal Ferrocyanides

Dipti Bharti and Charu Arora*.....1428

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ABSTRACT:

Manganese cobalt, nickel, copper, zinc and cadmium ferrocyanides were synthesized and characterized by IR spectra, magnetic susceptibility and elemental analysis studies. The natural antifungal plants such as *Azadirachta indica*, *Cassia alata*, *Vitex negundo* and *Nerium oleander* were showed synergistic effect with transition metal ferrocyanides. The natural antifungal plant extracts with metal ferrocyanides complexes were found to be having more antifungal property in comparison to metal ferrocyanides and plants extract alone. Antifungal activities of natural antifungals, metal hexacyanoferrate (II) compounds were tested against *Rhizoctonia solani* causing black scurf in potato. Cadmium ferrocyanide with *Azadirachta indica* extract and nickel ferrocyanide with *Cassia alata* extract complexes were found to have maximum and minimum antifungal property, respectively.

KEYWORDS: Medicinal plants, transition metal ferrocyanides, synergistic effects, *Rhizoctonia solani*.

Removal of Heavy Metals from Water/ Wastewater Using Agricultural and Industrial By-Products as Adsorbents.

Divyanshi Sharma.....1432

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ABSTRACT:

Water used in Industries creates a waste water having metals which creates a hazard for our environment because of introducing various pollutants such as heavy metals into soil and other resources. The adsorption process is being widely used by various researchers for the removal of heavy metals from water/waste water and the activated carbon remains an expensive adsorbent. Therefore there is an urgent need to introduce possible Agricultural and Industrial By-Products as Adsorbent for the Removal of Heavy Metals from Water/ Wastewater. In this study the ability of different adsorbents to remove heavy metals like Chromium, Copper, arsenic, cadmium, and lead has been investigated.

The objectives of this study is to contribute in the search for low cost, eco friendly adsorbents and utilization of various agricultural and industrial by-products such as Sugarcane Bagasse, Rice husk Activated carbon derived from Coconut shell, Activated charcoal derived from Coconut shell, Coconut husk carbon, Coconut shell carbon, Tea waste, Chitosan/ Chitin, Chitosan coated oil palm shell charcoal, Dye treated Cassava Mesocarp, Green algae (*Ulva Lactuca*) Sago waste, Coconut husk, coconut husk and palm pressed fibers, carbon prepared from *Casurina Equisetifolia*, Zeolite, Biocharcoal for the Removal of Heavy Metals from Water/ Wastewater.

KEYWORDS: Adsorption; Adsorbents; Heavy Metals; Agricultural Waste; Industrial Waste; Water; Wastewater.

Spectrophotometric Method for Simultaneous Estimation of Desloratadine and Pseudoephedrine Hydrochloride from Tablets and Dissolution Media

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ABSTRACT:

The simple, selective, rapid, precise and economical spectrophotometric method has been developed for simultaneous estimation of Desloratadine and Pseudoephedrine Hydrochloride, from two components solid dosage forms and dissolution media. Dissolution media 0.1N Hydrochloride acid and 0.1M Potassium Phosphate Buffer P^H 7.5 was used. The simultaneous equation method involves the measurement of absorbance at two wavelength 281.5 nm (λ_{max} of Desloratadine) and 256.5 nm (λ_{max} of Pseudoephedrine Hydrochloride) in 0.1N Hydrochloride acid. 241.5 nm (λ_{max} of Desloratadine) and 256.5 nm (λ_{max} of Pseudoephedrine Hydrochloride) in 0.1M Potassium Phosphate Buffer (P^H 7.5). The linearity lies between 2.5-25 $\mu\text{g/ml}$ for Desloratadine and 120-960 $\mu\text{g/ml}$ for Pseudoephedrine Hydrochloride in both media. The developed method was validated in terms of accuracy, precision, Linearity, Limit of detection, Limit of quantitation. The method showed good reproducibility and recovery with % RSD less than 1.5. The methods were found to be rapid, specific, precise and accurate and can be successfully applied for the routine analysis of Desloratadine and Pseudoephedrine Hydrochloride from Tablets and dissolution media.

KEYWORDS: Desloratadine, Pseudoephedrine Hydrochloride, Spectrophotometry, Simultaneous equation method.

A Novel Ion-Selective Electrode Based on Pyrole-2-Carboxaldehyde-Semicarbazide for Potentiometric Determination of Ca (II) Ions

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ABSTRACT:

A novel Ca²⁺-selective membrane sensor based on Pyrole-2-carboxaldehyde-semicarbazide (PCASC) was prepared. The plasticized membrane sensor based on Pyrole-2-carboxaldehyde-semicarbazide (PCASC) exhibits a Nerstian response for Ca²⁺ ions over a relatively wide concentration range with a limit of detection of 1.0×10^{-8} M. It has a fast response time of <10 s and can be used for at least weeks without observing any major deviation. The sensor revealed very good selectivity with respect to diverse ions. The response of the proposed sensor is independent on pH in the range 3.0 to 10.5. It was used as indicator electrode and also used for pollution monitoring, agriculture and industrial wastage.

KEYWORDS: Ca²⁺, Ion-selective electrode, PVC membrane, Potentiometry

Preparation and Characterization of Doped Ceria Nano Particles by Chemical Precipitation

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ABSTRACT:

In this present research work, chemical precipitation technique was employed to synthesize doped ceria nano particles. The precursor materials, such as, cerium nitrate hexahydrate (basic material) and sodium hydroxide (precipitator material) were used to prepare different compositions of phase pure doped ceria (Ce_{0.9}Gd_{0.1}O_{2- δ} , Ce_{0.9}Y_{0.1}O_{2- δ} , Ce_{0.8}Gd_{0.2}O_{2- δ} and Ce_{0.8}Y_{0.2}O_{2- δ}) with an intention to use in solid oxide fuel cells (SOFCs) as electrolytes. The physico-chemical properties of the resultant oxides were characterized by XRD, FT-IR, particle size analysis and SEM. The XRD results revealed the formation of well-crystalline cubic fluorite structure in all the doped ceria powders after calcination at 750°C. The SEM observation showed an average grain size of about 50 – 100nm for the optimal doped ceria powder and particle size analysis gave a narrow distribution of particle size. These results suggest that doped ceria can further improve the use of SOFC at low temperatures.

KEYWORDS: Ceria, SOFC, chemical precipitation, physical characterization.

Antibacterial, Anthelmintic, Analgesic and Anti-Inflammatory Activity of Conventional and Microwave Assisted Synthesized 3-(Substituted)-2-Phenylquinazolin-4(3h)-One.

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ABSTRACT:

The present research work were aimed to synthesize a series of various substituted quinazolinone containing 3-(Substituted)-2-phenylquinazolin-4(3H)-one. The compound 2-Phenyl-4H-3,1-benzoxazin-4-one, **I** were prepared by treating anthranilic acid with benzoyl chloride in pyridine. Synthesis of 3-Amino-2-phenylquinazolin-4(3H)-one, **II** carried out by reacting, **I** with hydrazine hydrate in ethanol. The compound 2-[(4-Oxo-2-phenylquinazolin-3(4H)-yl)-amino]carbonyl]benzoic acid, **III** obtained by reacting **II** with phthalic anhydride in ethanol. Synthesis of 2-Phenyl-3- [-(4-substituted)-phenylmethylene]-amino]-quinazolin-4(3H)-one, **IV**_(a-b) were done by reacting **II** with 4-Substituted benzaldehyde in glacial acetic acid. Synthesis of *N*-(4-Oxo-2-phenylquinazolin-3(4H)-yl)benzamide, **V** were done by reacting **II** with benzoyl chloride in pyridine. Finally, 3-[3-(2,4-Dichlorophenoxy)-3-(4-substituted phenyl)-2-oxoazetidin-1-yl]-2-phenylquinazolin-4(3H)-one, **VI**_(a-b) were synthesized by reacting **IV**_(a-b) with 2,4-Dichlorophenoxyacetic acid and thionyl chloride in benzene. These derivatives were prepared by microwave as well as conventional method. Structure of the compounds has been established by means of IR, ¹H-NMR and MS. All the compounds were evaluated for antibacterial activity against Gram-positive bacteria and Gram-negative bacteria. Most of the compounds showed significant antibacterial activities when compared with the standard drug ciprofloxacin at the concentration of 500 µg/ml and 250 µg/ml. In this research work, *in vitro* anthelmintic activity of 3-(Substituted)-2-phenylquinazolin-4(3H)-one carried out in comparison with piperazine citrate. These newly synthesized quinazolinone derivatives showed paralysis and followed by death at concentration of 10 mg/ml for the screening of anthelmintic activity. These derivatives also screened for analgesic and anti-inflammatory activity. The results showed that synthesized compound having moderate analgesic and anti-inflammatory activity.

KEYWORDS: Quinazolin-4(3H)-one, 4H-3,1-Benzoxazin-4-one, antibacterial, anthelmintic, analgesic and anti-inflammatory activity.

Solvent Polarity Based Microwave Assisted Extraction of Ferulic Acid from Whole Plant of *Cynodon dactylon* (L.) And It's Quantitative Determination by Developed and Validated HPTLC Method

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ABSTRACT:

Simple, precise, economical and eco-friendly MAE-HPTLC method was developed for the extraction and quantitation of ferulic acid in the whole plant of *Cynodon dactylon* (L.) Pers. Optimization of various parameters which influence the microwave assisted extraction process, like nature of solvent, volume of solvent, microwave energy input and microwave irradiation time were studied. Effect of solvent polarity on MAE process was observed by using range of solvents from non-polar nature to polar nature. Solvent volume (20 mL), extraction time (120 s) and microwave irradiation power (900 W) were found to be most suitable for extraction of ferulic acid. The developed HPTLC method was validated in terms of linearity, precision, limit of detection, limit of quantitation and accuracy. The maximum yield of extract (1.021%, w/w) from raw plant powder was obtained when extracted with ethanol, while lowest yield of extract (0.421%, w/w) was found with *n*-hexane. Ethanol extract showed maximum yield of ferulic acid (261.49 µg per 100 gm of dry weight of whole plant), whereas ferulic acid was not detected in *n*-hexane and dichloromethane extracts.

KEYWORDS: *Cynodon dactylon* (L.) Pers., Ferulic acid, MAE-HPTLC method, validation

Validation and Application of a High-Performance Liquid Chromatography Method for Estimation of Sitagliptin Phosphate from Bulk Drug and Pharmaceutical Formulation

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ABSTRACT:

A gradient LC method was developed for determination and quantitation of Sitagliptin in bulk drug and pharmaceutical formulations. The separation was accomplished on a symmetry reversed phase C18 column, 75 mm ×4.6mm I.D., 3.5µm column using mobile phase consist of acetonitrile and 0.03% formic acid at flow rate of 0.3ml/min. The eluents were monitored with a UV detector set at 268 nm as detection wavelength. The investigated validation elements showed the method has acceptable specificity, accuracy, linearity, precision, robustness. This method was found to be linear within range of 100 to 500 µg.ml⁻¹ (r=0.9999). The method could be of use for rapid and routine quality control analysis of Sitagliptin. Thus, the developed method can be used for process development as well as quality assurance of Sitagliptin in bulk drug and pharmaceutical formulations.

KEYWORDS: Sitagliptin phosphate, RP-HPLC, validation, liquid chromatography, quality assurance.

***Azadirachta indica* Leaves as Green Inhibitor for Brass in Natural Sea Water Environment**

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ABSTRACT:

The inhibitive action of leaves extract of *Azadirachta indica* on Brass in Natural sea water environment was studied using mass loss measurement. The effect of temperature and immersion time on the corrosion of Brass in Natural sea water with addition of extract was also studied. The inhibition efficiency increased with increase of inhibitor concentration and decreased with rise in temperature and time. Corrosion inhibition may be due to the spontaneous physical adsorption of the plant constituents in the inhibitor on the surface of metal. The adsorption of the active molecules present in the extract on the Brass surface obeyed by the Langmuir and Temkin adsorption isotherm. The protective film formed on the metal surface was analyzed by UV and IR spectroscopy. The results indicated that the extract of *Azadirachta indica* leaves could serve as an effective inhibitor on Brass in Natural sea water environment.

KEYWORDS: Mass loss, Brass, Isotherm and Natural sea water.

Melon (*Citrullus lanatus*) Seed Oil a Potential Source for Biodiesel Production

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ABSTRACT:

Melon (*Citrullus lanatus*) seed oil was transesterified using 1% sodium hydroxide at 60°C to produce biodiesel. The percentage yield of the biodiesel was high, indicative of a good biodiesel feedstock. The biodiesel obtained showed good quality on characterization of its fuel properties. The relative density was found to be 0.88 with lower kinematic viscosity of 2.596mm²/s. The acid value was 0.36mg, iodine value 111.67mg and peroxide value 0.06meq. The flash point and the cetane number were 120°C and 55.84 respectively while the heat of combustion was 39.3 MJ/Kg. These results show that melon seed oil has good biodiesel properties and may be suitable as fuel for internal combustion engine.

KEYWORDS: Biodiesel; Melon seed oil.

Spectrophotometric Determination of Cefditoren Pivoxil by Diazotization Coupling Reaction in Solid Dosage Forms

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ABSTRACT:

Three simple, sensitive spectrophotometric methods (Method A, B and C) are developed based on the diazotization of Cefditoren Pivoxil with nitrous acid (NaNO_2/HCl) at cold temperature followed by its coupling in-situ with β naphthol (Method A) to yield deep purple coloured chromogen, diphenyl amine (Method B) to yield pink coloured chromogen, BMR (Method C) to yield purple coloured chromogen, exhibiting absorption maxima at 542, 506 and 539nm, respectively. Beer's law was obeyed in the concentration ranges of 20-60, 10-50 and 5-30 $\mu\text{g/ml}$ respectively. The coloured chromogen was stable for 3-5hrs. These methods were extended to pharmaceutical formulations and there was no interference from any common excipients which are usually present in tablet dosage formulations. The results of analysis have been validated statistically and by recovery studies.

KEYWORDS: Cefditoren Pivoxil, Spectrophotometry, β naphthol, diphenyl amine, BMR.

Evaluation of Nitric Oxide Scavenging Activity of *Rumex vesicarius* L.

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ABSTRACT:

Rumex vesicarius L. (Polygonaceae) commonly known as "Bladder dock" is an annual herb, cultivated as green leafy vegetable in several parts of India and used in daily diet. Antioxidant therapy is found to be useful in curing chronic complicated diseases related with free radical activity. Antioxidant potential of *Rumex vesicarius* L. was determined by Nitric oxide free radical scavenging assay, by Griess reagent method. The extracts (hexane, chloroform, ethylacetate, ethanol and aqueous) of the plant were screened for preliminary phytoconstituents, antioxidant activity and total antioxidant capacity. The evaluation revealed the presence of phytoconstituents flavonoids, phenols, tannins and saponins. The extracts showed significant inhibition percentage by dose dependent manner. Of all the five extracts analyzed the ethanol extract showed maximum inhibition percent of 76.86, while the hexane extract showed minimum inhibition percent of 31.92. In the present study the extracts of the plant showed significant antioxidant activity and total antioxidant capacity on compared with standard antioxidant. The present study is also an extension for the formulation and evaluation of different antioxidants from natural sources.

KEYWORDS: *Rumex vesicarius* L., Phytoconstituents, Antioxidant potential, Nitric Oxide scavenging activity, Total antioxidant capacity,

Synthesis and Evaluation of antioxidant and anti-inflammatory activity of Conjugates of Amino Acids with N-Aroyl- N, N'-Dicyclohexyl Urea

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ABSTRACT:

A series of 2-((2-3-benzoyl-1,3-dicyclohexylureido)-2-oxoethyl)amino)-3-(4hydroxyphenyl) propanoic acid (3a) and its analogs were synthesized from N,N'-Dicyclohexylcarbodiimide (DCC) by acetylating and finally condensing with amino acids to yield good antioxidant molecules which are showing the potency nearer to ascorbic acid and exploring their anti inflammatory activity.

KEYWORDS: Amino acid, N-aroyl- N, N'-dicyclohexyl urea, Antioxidant, DPPH,

Sensitive Extractive Simpler Spectrophotometric Methods for the Microdetermination of Diltiazem HCl and Pipazethate HCl in Pure and Tablet Dosage Forms

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ABSTRACT:

Three new, rapid, sensitive, economical and simpler spectrophotometric methods (A—C) have been developed for the microdetermination of diltiazem hydrochloride (DT-HCl) and pipazethate hydrochloride (PZ-HCl) in pure and tablet dosage forms. In method A, simpler direct spectrophotometric measurements in ultra violet region have been developed for the determination of DT-HCl and PZ-HCl without any chemical reagents. A solution of DT-HCl or PZ-HCl in 0.1 M HCl shows maximum absorbance at 238 and 253 nm, respectively. After optimization, the systems obeyed Beer's law in the concentration range of 2—25 and 5—60 µg/mL for DT-HCl and PZ-HCl, respectively. The apparent molar absorptivities were found to be 1.837×10^4 and 7.931×10^3 L mol⁻¹ cm⁻¹ for DT-HCl and PZ-HCl, respectively. Whereas the methods B and C involves the formation of intense yellow ion-association complex between drug(s) and either of phenol red (PR) or chlorophenol red (CPR) reagents followed by extraction with methylene chloride. The ion-associates exhibit absorption maxima at 390 and 402 nm for DT-HCl and at 393 and 405 nm for PZ-HCl with PR and CPR, respectively. After optimization, the systems obeyed Beer's law in the concentration range of 11.28—112.75 and 2.26—48.48 µg/mL for DT-HCl and 8.72—104.64 and 3.27—49.05 µg/mL for PZ-HCl with PR and CPR, respectively. The apparent molar absorptivities were found to be 4.086×10^3 and 9.919×10^3 L mol⁻¹ cm⁻¹ for DT-HCl and 4.212×10^3 and 9.624×10^3 L mol⁻¹ cm⁻¹ for PZ-HCl with PR and CPR, respectively. In methods A—C Sandell's Sensitivity, the slope, intercept, correlation coefficient, relative standard deviation (RSD), detection and quantitation limits were also calculated (n=5) for DT-HCl and PZ-HCl. No interference was observed from common excipients present in pharmaceutical formulations. The results are well compared to those obtained by the reference methods using t- and F-tests. Therefore, the present methods are suitable for the drugs determination, as they are sensitive and precise to a high extent.

KEYWORDS: UV/VIS Spectrophotometry; Diltiazem hydrochloride; Pipazethate hydrochloride; Phenol red; Chlorophenol red; Tablet dosage forms
