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Abstract

REVIEW ARTICLES

Pharmacological and Synthetic Profile of 1, 2, 4-Triazoles

Nachiket S. Dighe^{1}, Ravindra B. Saudagar², Ramesh S. Kalkotwar³ and D.A. Jain⁴.....1807*

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ABSTRACT:

Triazole is a five membered heterocyclic system consisting of two carbon atoms and three nitrogen atoms shows wide range of biological activities. Triazoles can be synthesized using Einhorn-Brunner reaction or the Pellizzari reaction from acyl hydrazides. Triazoles possess wide spectrum of biological activities like including antibacterial, antifungal, antiviral, anti-inflammatory, anticonvulsant, antidepressant, antihypertensive, analgesic, and hypoglycemic properties. The present reviews attempted to gather the various developments in synthesis and biological activities of triazole derivatives.

KEYWORDS: 1, 2, 4-Triazole, Pharmacological activity, SAR, Total synthesis.

Groundwater Quality: A Review

Mohammad Mohsin¹, Vidya Pradhan², Mazahar Farooqui^{1,2} and S.D. Rathod³.....1812

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Multi-Component Reaction and Their Application in Drug Discovery

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ABSTRACT:

Multicomponent reactions (MCRs) provide a powerful tool towards the one-pot synthesis of diverse and complex compounds on the one hand and small and 'drug-like' heterocycles on the other hand. No other single synthesis technology enables chemists to search such large chemical spaces as provided by MCRs. This review describes various three component and four component reaction example and recent advances in the application of isocyanide-based multicomponent reactions (IMCRs) in drug discovery.

KEYWORDS: Multicomponent reaction, Three component reaction, Four component reaction, Application, Isocyanide based reaction

RESEARCH ARTICLES

Standardization of *Eclipta alba* (L)

Muhammad Shabeer*, Gul Abad Khan, Akhtar Ali, Zakir Ullah and Fazl-i-Sattar.....1825

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ABSTRACT:

Eclipta alba (L.) Hassk commonly known as False Daisy, yerba de tago, and bhringraj, is a plant belonging to the family Asteraceae.³ Root well developed, cylindrical, greyish. It is also named 'kehrāj' in Assamese and karisalankanni in Tamil. The air-dried powder was extracted with different solvent systems such as petroleum-ether (40-60°C), benzene, chloroform, ethanol and sterile water and preliminary phytochemical analysis of the extracts including TLC assays were done and the R_f values were determined. Physico-chemical characters, fluorescence characters and extractive values of the powder in different solvent systems were also determined. The pharmacognostical parameters studied, may be used as a tool for the correct identification of the plant and also to test the adulterants if any.

KEYWORDS: *Eclipta alba*, chromatography, Fluorescence analysis, phytochemical screening

Method Development and Validation of Ramipril and Amlodipine Besylate by RP-HPLC.

N.I. Kochar*, M.N. Dahake, R.L. Bakal, A.P. Devani and A.V. Chandewar.....1829

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Sant Gadge Baba Amravati University, Amravati, Maharashtra State, India.

ABSTRACT:

A simple isocratic RP-HPLC method has been developed and subsequently validated for the determination of Ramipril and Amlodipine Besylate in pharmaceutical dosage forms within very short retention time. The method employs an Xterra C18 column, 5 μ , 150 mm x 4.60 mm id with flow rate of 1.5 ml/min using UV detection at 210nm. The separation was carried out using a mobile phase consisting of Sodium Lauryl Sulfate buffer by adjusting pH 2.5 and final composition is Buffer: Acetonitrile: Methanol (45:16.5:38.5)V/V. The retention time for Ramipril and Amlodipine Besylate was found to be 3.1 minutes and 3.8 minutes respectively. The results of analysis were validated statically and by recovery studies. Hence the proposed method was found to be accurate, precise, reproducible and specific and can be used for simultaneous analysis of these drugs in tablet formulation.

KEYWORDS: RP-HPLC, Sodium Lauryl Sulfate buffer, Ramipril, Amlodipine Besylate.

Surface Active Agents Studies: Industrial Degreaser from the Nigerian Linear Alkyl Benzene

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ABSTRACT:

Linear alkylbenzene, a colourless oily liquid with specific gravity 0.86g/cm³, produced by the Kaduna Refinery and Petrochemical Company was sulphonated at -10°C under conditions of freezing mixture of ice/NaCl, using Oleum (65% SO₃) in the first process and H₂SO₄ (98%) in the second process and the results compared. The resultant linear alkylbenzene sulphonic acid was neutralized with varying concentrations of 2M, 4M and 6M NaOH to ascertain the optimal base concentration needed for effective neutralization to different pH values of 7, 9 and 11 to give the active ingredient (AI). Industrial degreaser was formulated by the addition to the AI N,N-bis(2-hydroxyethyl) lauramide, a foam booster/stabilizer prepared from the saponification of coconut oil using diethanolamine, EDTA, corrosion inhibitors and Citronella perfume extracted from the *Eucalyptus Citronella* plant by steam distillation was added to the formulation to mask the soapy odour to give it more appeal.

Simultaneous Estimation of Cefpodoxime Proxetil and Ofloxacin in Combined Dosage Form by UV-Spectrophotometric Method

*Naresh M. Kalsariya**, *R.M. Chodavadia*, *P.B. Patel*, *Z.N. Mevada*, *B.P. Marolia* and *S.A. Shah*.....1836

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ABSTRACT:

Two spectroscopic methods for simultaneous estimation of cefpodoxime proxetil (CP) and ofloxacin (OFL) in combined tablet dosage form have been developed. The first method is simultaneous equations method which involves the formation of simultaneous equations at 234.90 nm (λ_{\max} of cefpodoxime) and 298 nm (λ_{\max} of ofloxacin). The second method is Q-analysis method (Q-absorbance ratio), which involves the formation of Q-absorbance equation at 271.60 nm (Iso-absorptive point) and 298 nm (λ_{\max} of ofloxacin). In this both method the linearity was evaluated over the concentration range of 2-10 μ g/ml for cefpodoxime and ofloxacin. The accuracy of the methods were assessed by recovery studies and was found to be 100.9 \pm 0.16% and 98.22 \pm 0.44% for simultaneous equations method and 99.5 \pm 0.133% and 98.90 \pm 0.65% for Q-absorbance ratio method for cefpodoxime and ofloxacin respectively. The proposed methods are simple, accurate, precise, rapid and cost effective. Therefore the proposed methods can be used for routine analysis of both drugs in bulk as well as in pharmaceutical formulations.

KEYWORDS: Q-analysis method, Iso-absorptive point, CP and OFL.

Synthesis of New Indoline-2-Ones and Their Microbial Activity

*Freddy H. Havaladar**, *Azadkumar S. Sharma* and *Peter Roni F. Pinto*.....1840

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ABSTRACT:

The acid hydrazides (I and IV) were condensed with indole-2,3-dione in ethanol to yield hydrazone-indolin-2-ones (II and V) which on aminomethylation with formaldehyde and different amines furnished 1-(substituted aminomethyl)-hydrazone-indolin-2-ones (IIIa-e and VIa-e). The structures of the newly synthesized compounds have been confirmed by IR, ¹H NMR and Mass spectra. These compounds have shown promising biological activity.

KEYWORDS: Synthesis, Mannich bases, biological activity and spectral data.

Thermal and Spectroscopic Feature of the Cu₃AsS₄ Enargite Oxidation Up To 800°C. Implications in the Arsenic Evolution

V.L. Barone¹, *D. Gazzoli²*, *I.D Lick³*, *I.B. Schalamuk⁴* and *I.L. Botto^{1*}*.....1844

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ABSTRACT:

The thermal oxidation of enargite (Cu₃AsS₄) from Chuquicamata (Chile), has been studied between RT and 800°C. Enargite samples were heated in air atmosphere and analyzed by means of several physicochemical techniques such as XRPD, SEM-EDS, FTIR, XPS and chemical analysis. A surface digenite formation was observed in a first step. The XPS technique was particularly useful to correlate the copper oxidation with the As-O-Cu interaction,

responsible for the continuous and slow As evolution up to temperatures higher than 600°C. These results must be considered of interest to reduce the negative environmental impact of the technological copper production from valuable Cu-ores where enargite is present.

KEYWORDS: Enargite, oxidation, As-O-Cu interaction, arsenic evolution.

Simultaneous Spectrophotometric Estimation of Glimepiride and Pioglitazone HCl in Combined Dosage Form using Absorbance Correction Method

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ABSTRACT:

A simple, sensitive, rapid, accurate and precise UV-spectrophotometric (absorbance correction) method for simultaneous estimation of glimepiride and pioglitazone HCl in pharmaceutical dosage form was developed and validated for accuracy, precision, ruggedness, linearity and range. The wavelengths selected for estimation of drugs were 270.0 nm for pioglitazone HCl and 230.0 nm for glimepiride. Linearity for detector response for glimepiride and pioglitazone HCl were in the range of 2-50 µg/ml and 10-170 µg/ml respectively. The method gives results of high accuracy and high recovery of 100.34 ± 0.25 and 99.54 ± 0.47 for glimepiride and pioglitazone HCl respectively. % R.S.D. values for the marketed formulation analysis were found to be less than 2 which indicated good precision and reproducibility of the method. Commercial capsule formulation was successfully analyzed using the developed method.

KEYWORDS: Glimepiride, Pioglitazone, UV Spectrophotometry, Absorbance correction method, method validation

Hepatoprotective Effect of an Aqueous Extract of the Rhizomes of *Sansevieria senegambica* Baker Against Carbon Tetrachloride Induced Liver Injury

Ikewuchi Jude Chigozie and Ikewuchi Catherine Chidinma.....1854*

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ABSTRACT:

In this study, the ability of aqueous extract of the rhizomes of *Sansevieria senegambica*, to protect against carbon tetrachloride induced liver damage was investigated in Wistar albino rats. The carbon tetrachloride was prepared 1:5 (v:v) in olive oil, and administered subcutaneously at 1 mL/kg body weight. The extract was administered to both normal and carbon tetrachloride treated rats at 100, 200 and 300 mg/kg. On fractionation and gas chromatographic analysis of the crude aqueous extract, the phytosterol and tannins fractions contained 100% of β-sitosterol and tannic acid respectively. Compared to test control, the treatment dose dependently produced significantly lower ($P < 0.05$) alkaline phosphatase, aspartate and alanine transaminase activities, and total and conjugated bilirubin levels. Histopathological studies showed that carbon tetrachloride caused fatty degeneration of hepatocytes; while pre-treatment with the extract exhibited protection, which confirmed the results of the biochemical studies. The results of this study indicated that treatment with the plant extract protects the liver against carbon tetrachloride induced hepatotoxicity. This corroborates the use of *Sansevieria senegambica* in African traditional health care for the treatment of liver problems.

KEYWORDS: β-sitosterol; carbon tetrachloride; histopathology; *Sansevieria senegambica* Baker (Agavaceae); tannic acid

Kinetics of Oxidation of 2-Hydroxy-1-Naphthalidene Anil and Substituted Anils by $Ce^{4+} \rightarrow Ce^{3+}$ Redox System in Aqueous Sulphuric Acid Medium.

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ABSTRACT:

The kinetics of oxidation of the Schiff base 2-hydroxy - 1 - Naphthalidene anil and substituted anils such as 2' - methoxy - 2 - hydroxy - 1 - naphthalidene anil, 3' - Methoxy - 2 - Hydroxy - 1 - Naphthalidene anil and 4' - Methoxy - 2 - Hydroxy - 1 - Naphthalidene anil by Ce (IV) as oxidant in aqueous sulphuric acid medium. The kinetic study is carried out by using various concentrations of oxidants and the substrates, which is found to be the first order reaction. A suitable plausible mechanism has been suggested on the basis of kinetic results.

KEYWORDS: Kinetics of oxidation, Schiff Base, Redox system, Reaction Mechanism.

Evaluation of *In Vitro* Nitric Oxide Scavenging Activity of Medicinal Plant- *Ehretia laevis*

Rasika C. Torane^{1*}, Vaishali B. Adsul², Chandrakant D. Shendkar² and Nirmala R. Deshpande¹.....1864

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ABSTRACT:

Ehretia laevis, from the family Boraginaceae is an important medicinal plant. All parts are widely used in medicines. Present study reports *in vitro* antioxidant activity of ethanol extract of leaves and stem of *Ehretia laevis*. The study was further extended for fractionation of leaves extract in methanol. Those various activities were compared to standard antioxidant such as ascorbic acid. The comparison of antioxidant activity of stem and leaves, prepared in 80 % ethanol, reveals that activity of leaves is higher than that of stem. Methanol extract, prepared at room temperature, along with its fractions indicates activity. As antioxidant therapy is found to be useful in complicated disease status related with free radical activity, the present study might be extended for the formulation and evaluation of different antioxidant herbal dosage forms.

KEYWORDS: *Ehretia laevis*, Boraginaceae, Antioxidant, Nitric Oxide Scavenging activity.

Evaluation of Standardization Parameters for Sitopaladi Churna an Ayurvedic Formulation

A. K. Meena¹, A. K. Mangal¹, M. M. Rao^{1*}, P. Panda¹, G. V. Simha¹, S. K. Shakya¹, M. M. Padhi² and Ramesh Babu²....1867

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ABSTRACT:

Sitopaladi churna is well known ayurvedic formulation is official in Ayurvedic Formulary of India, traditionally used for asthma, cough and cold, tuberculosis, chest pain, chronic rhinitis/sinusitis, coryza and other respiratory disorders. It is used as an anti-tussive, analgesic and antipyretic. It is observed that the consistency and content varies from one manufacturer to another which affects therapeutic activity of the formulations. Hence, it is needed to develop a protocol for the evaluation of herbal drugs. In this study attempts to evaluate the main parameters of drug standardization like Organoleptic characteristics, pharmacognostic study, extractive values, ash values, physical characteristics, loss on drying and TLC. This study on Sitopaladi churna was precise, reproducible and may be considered as a protocol for its evaluation and establishment.

KEYWORDS: Ayurvedic formulation, standardisation, pharmacognosy, kapha, Sitopaladi Churna

Effects of Gasoline and Oxygenated Gasoline Inhalation on Lungs and Trachea in Rats.

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ABSTRACT:

Effects of 1, 2 and 3 month - inhalation of 1216, 1824, and 2432ppm of gasoline representing GO1, GO2 and GO3 respectively were studied in rats .The OG1,OG2 and OG3 groups, represent 2432ppm of gasoline oxygenated with 1, 2 and 3% of equal volumes of methanol and isopropyl ether, respectively. Lung collapse was observed in all the groups after 3 months of exposure except in the control. In GO3 however, the severity of lung collapse was high with pneumonitis. Groups OG2 and OG3 showed mild to moderate lung collapse. This shows that oxygenation reduced the severity of lung collapse. In the trachea, there was fragmentation of muscle fibers which is more severe in GO3 groups leading to hemorrhage into the lumen of the trachea. It was generally observed from the study, that inhalation of high concentrations of gasoline for a long time like 3 months may be deleterious to health.

KEYWORDS: Gasoline, Inhalation, Lungs, Treachea.

Quality Control of Paracetamol Drugs in West Africa: Spectrophotometric Analysis of Eight Most Available Commercial Formulations in Niger.

Rabani Adamou Alassane Abdoulaye and Maimouna Soumaila.....1877*

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ABSTRACT:

Paracetamol is a popular analgesic and antipyretic drug. The infiltration of counterfeit drugs into the West African medicines market is of concern. The present study aimed to investigate the quality of eight (8) most used paracetamol drugs. A cost effective and reproducible spectrophotometric method was first developed. The absorbance signal was measured at 245 nm (absorption maximum) in the used medium (water-ethanol; v:v, 20:1). A Linear calibration curve ($r^2=0.999$) allowing paracetamol active ingredient analysis in pharmaceuticals was established with a large linear dynamic range (LDR) between 2 - 40 $\mu\text{g/mL}$ and a relatively low limit of detection (LOD = 0.65 $\mu\text{g/mL}$). In eight (8) commercial formulations obtained from licensed (4) and illicit (4) markets, five (5) have substandard concentrations and one (1) is a fake drug. All the formulations obtained from illicit market are of bad quality: three of them have substandard concentrations and the fourth one is a fake. The presence of two (2) substandard drugs among the four (4) samples obtained from formal pharmacies open the debate on the infiltration of the licensed medicines trade by the illicit market products. This is particularly worrying in West African countries devoid of efficacy drug regulatory system and where medicines quality control mechanism is weak.

KEYWORDS: paracetamol, analysis, counterfeit drugs, Niger, West Africa.

The Effect of Ball Milling on The Nitrogen Content of Ramie (*Boehmeria nivea*) Nitrocellulose as Propellant Material

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ABSTRACT:

Mechanical treatment by means of ball milling has been done on ramie cellulose to reduce its crystallinity and increased the amorphous region, this provides more accessible hydroxyl groups for reactions. Ball milling for 96

hours could reduce the degree of crystallinity ramie cellulose from 58.1% to 55% and at the same time could increase the nitrogen content from 13.31 to 13.59. The result of study are interpreted in terms of model involving mechanical deformation by breaking hydrogen bonds in α -cellulose, opening up the structure and making more free ion H of -OH groups to be substituted by the nitronium ion.

KEYWORDS: Nitrocellulose, ballmilling, Ramie cellulose, crystallinity, propellant.

Synthesis and Photophysical Properties of Zn(II) and Cu(II) Complex of 2-[(E)-(2-Hydroxyphenyl)Methylidene]Amino}Benzoic Acid.

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ABSTRACT:

Schiff bases are versatile ligands which are synthesized by the condensation of primary amines with carbonyl groups of aldehydes or ketones. The fluorescence intensity can be increased by the formation of metal complex. Anthranilic acid or 2-aminophenol reacts with aldehydes or ketones forming bidentate or tridentate ligands which are able to form complex with transition metals. These ligands/chelates forming complexes with Zn(II) and Cu(II) metal ions. The Zn(II) complexes are yellow in nature while Cu(II) light blue color shows absorption in UV region.

KEYWORDS: Schiff bases, anthranilic acid, 2-hydroaniline, aldehydes, fluorescence, complexes.

Degradation of Dye Using CUS-CDS as A Photocatalyst

B.K. Uphade, D.G. Thorat, A.G. Gadhve and V.A. Kadnor.....1892*

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ABSTRACT:

A visible light sensitive CuS-CdS photocatalyst was synthesized by using salts of Cu and Cd. The CuS-CdS photocatalyst was characterized using IR technique. The bleaching of solochrome blue dye was carried out in presence of semiconductor CuS-CdS photocatalyst. Effects of various parameters like amount of CuS-CdS photocatalyst, pH, dye concentration etc were studied and the rate of bleaching was observed. A tentative mechanism has been proposed.

KEYWORDS: Photocatalyst, CuS-CdS, dye degradation.

Non-Aqueous Titration and TLC Fingerprint Profile of Pioglitazone Hydrochloride in Formulations

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ABSTRACT:

An inexpensive, simple, precise and rapid method for the determination of pioglitazone hydrochloride in bulk and in tablets is described. The procedure is based on the use of volumetric dosage in a non-aqueous medium in glacial acetic acid with 0.1 M perchloric acid. The method validation yielded good results and included the precision, accuracy and recovery test. It was also found that the excipients in the commercial tablet preparation did not

interfere with the assay. Besides this, TLC Profile of pioglitazone hydrochloride formulation was also recorded, which showed the presence of pioglitazone hydrochloride, when compared with standard with R_f value 0.62 in a solvent system.

KEYWORDS: Non-aqueous titration, Pioglitazone Hydrochloride, Perchloric acid, TLC

Bath Optimization and Corrosion Study of Ni-P on Zincated Aluminium from Glycine Bath

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ABSTRACT:

Electroless deposition is a fascinating technique by which smooth, uniform and highly adherent deposits can be obtained. It is one of the best and cost effective method. In this method, nickel-phosphorus (Ni-P) coatings were formed on aluminium alloy in an electroless glycine bath with various deposition conditions. The bath constituents such as nickel sulphate, glycine, sodium hypophosphite and bath parameters such as pH, temperature, surface area/volume ratio and plating time were optimized by changing the above to get better quality of nickel deposits on aluminium. In this process, nickel sulphate was used as metal ion source, glycine as a complexing agent and sodium hypophosphite was used as a reducing agent. The thickness and rate of deposition were measured from the weight of the Ni-P deposits. The corrosion resistant properties of the coatings were studied by Tafel polarization and electrochemical impedance spectroscopy (EIS). The electrochemical analysis in 3wt.%NaCl solution provided that, the Ni-P coating exhibited better corrosion resistance than the bare aluminium alloy substrate.

KEYWORDS: Electroless deposition, Ni-P, Tafel polarization, EIS, Aluminium

Development of Extractive Spectrophotometric Determination of Nickel (II) with Isatin-3-Semicarbazone (HISC) as an Analytical Reagent

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ABSTRACT:

A simple spectrophotometric method has been developed for the determination of Ni (II) by using Isatin-3-Semicarbazone (HISC) as an analytical reagent. HISC has been synthesized and characterized by elemental and spectral analysis. HISC extracts Ni (II) quantitatively (99.80%) into iso - amyl alcohol from an aqueous solution of pH range 5.5 - 7.2. Iso - amyl alcohol extract shows an intense peak at 500 nm (λ max). Beer's law is obeyed over the Ni (II) concentration range of 1.0 - 6.0 $\mu\text{g/ml}$. The sandell's sensitivity and molar absorptivity for Ni - HISC system is 7.32 ngcm^{-2} and 8014.07 $\text{L mole}^{-1}\text{cm}^{-1}$ respectively. The composition of extracted species is found to be 1: 2 (Ni: HISC) by Job's Continuous Variation and Mole Ratio Method. Interference by various ions has been studied. The proposed method has been successfully applied for determination of Ni (II) in alloy samples.

KEYWORDS: Extractive Spectrophotometry, Nickel (II), Isatin - 3 - Semicarbazone (HISC), Alloy samples.

Chemical Speciation of Ternary Complexes of Co (II), Ni (II) and Cu (II) With L-Histidine and L-Glutamic Acid in Low Dielectric Media

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ABSTRACT:

Chemical speciation of ternary complexes of Co(II), Ni(II) and Cu(II) with L-histidine and L-glutamic acid was studied in various concentrations (0-60% v/v) of DMSO-water mixtures maintaining an ionic strength of 0.16 mol L⁻¹ (NaCl) at 303.0 K. Alkalimetric titrations were carried out in different relative concentrations (M: L: X = 1:2.5:2.5, 1:2.5:5.0, 1:5.0:2.5) of metal (M) to histidine (L) to glutamic acid (X) with sodium hydroxide as titrant. Stability constants of ternary complexes were calculated and various models were refined with MINQUAD75. The trend of the variation in the stability constants with changing dielectric constant of the medium was explained based on the electrostatic interactions of the side chains of the ligands, charge neutralization, chelate effect, stacking interactions and hydrogen bonding. The species detected are MLXH, MLX₂H and MLX₂ for Ni(II) and Cu(II) and MLX₂H and MLX₂ for Co(II). Distribution diagrams with pH at different compositions of DMSO and structures of plausible ternary complexes were also presented.

KEYWORDS: Ternary complexes, chemical speciation, stability constants, DMSO, essential metals.

Synthesis and Characterization of Novel Pyridazinone derivatives with 5-Mercapto Tetrazole

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ABSTRACT:

A simple and efficient experimental procedure for the synthesis of novel pyridazinone derivatives containing 5-mercaptoTetrazole moiety was developed in the presence of several Aryl/alkyl halides and sodium hydride using Dry tetrahydrofuran (as a solvent). The structures of the newly synthesized compounds were characterized by ¹HNMR, IR, LCMS data, elemental analysis and melting point.

KEYWORDS: 6-(1-benzyl-1-H-tetrazol-5-ylthio)-4, 5-dimethylpyridazin-3-ol; 5-mercapto tetrazole, Triethylamine, Aryl/Alkyl halide.

Sensing of Lead and Copper Metal Ions by Substituted N-Methyl Piperazine Compound on Glassy Carbon Electrode.

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ABSTRACT:

Use of a 2,4 bis (4-methyl piperaz-yl-methyl) 1-4' hydroquinone (L) modified glassy carbon electrode (LMGCE) enhance the oxidation and reduction current of Pb(NO₃)₂ and CuSO₄ during cyclic voltammetry compared to bare glassy carbon electrode. Peak potential was not significantly changed as compared with unmodified one. The sensitivity under conditions of cyclic voltammetry is significantly dependent on the scan rate. The transfer coefficient values were calculated to be 0.013 and 0.078 for Pb²⁺ and Cu²⁺ ions respectively. The detection limit of this modified electrode was found to be 1 x 10⁻⁴M for Pb²⁺ and Cu²⁺ ions at glassy carbon electrode. The reduction and oxidation current of Pb(NO₃)₂ and CuSO₄ was higher at first cycle and became stable with minor decreases after second cycle. It is therefore evident that the LMGCE posses some degree of stability. The diffusion coefficient values for Pb²⁺ and Cu²⁺ ions on LMGCE were calculated by the chronoamperometry which is in the value of 8.3 x 10⁻⁷cm²/s and 3.5 x 10⁻⁶ cm²/s respectively. The reduction of Pb²⁺ and Cu²⁺ ions on L MGCE was studied by chronocoulometry which is supported to the cyclic voltammetry results. The tolerance limit of the lead and copper ion is 1 x 10⁻³M which is detected from the interference study of cadmium and mercury ions.

KEYWORDS: Glassy carbon electrode, sensor, Cyclic Voltammetry, Chronoamperometry, Chronocoulometry.

Electrochemical Reduction Behaviour of Guanethidine

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ABSTRACT:

The electrochemical reduction behaviour of 2-[2-(azocan-1-yl) ethyl] guanidine (Guanethidine) has been studied in different supporting electrolytes (HClO₄, HCl, H₂SO₄) in DMF water mixtures by employing D.C polarography, controlled potential electrolysis and millicoulometry. The kinetic parameters such as diffusion coefficient(D) and heterogeneous forward rate constant (k_{f, h}^o) values were evaluated and reported. A reduction mechanism is proposed in consistency with the data obtained.

KEYWORDS: D.C. polarography, controlled potential electrolysis, millicoulometry, guanethidine.

CuCl₂.2H₂O-Catalysed One-Pot Multi-Component Synthesis of β-Acetamido Ketones

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ABSTRACT:

One pot, four-component condensation of an aryl aldehyde, acetyl chloride, acetophenone and acetonitrile in the presence of Copper(II) chloride dihydrate is reported. Copper(II) chloride as an inexpensive, efficient, and readily available catalyst for the synthesis of β-acetamido ketones in high yields. The products obtained were clean and devoid of any undesired impurities as evident from ¹H NMR, IR, and TLC analysis.

KEYWORDS: Aryl aldehyde, Acetyl chloride, Acetophenone, Copper(II) chloride, β-Acetamido ketones

An Antifeedant Saponin from Seeds of *Barringtonia asiatica*

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ABSTRACT:

An antifeedant saponin has been isolated from the seeds of *Barringtonia asiatica* and its structure elucidated mainly by two dimensional NMR spectroscopy to be 3-*O*-{[β-D-galactopyranosyl(1→3)-β-D-glucopyranosyl(1→2)]-β-D-glucuronopyranosyloxy}-22-*O*-[2-methylbutyroyloxy]-16, 28-dihydroxy-(3β,16α,22α)-olean-12-ene.

KEYWORDS: *Barringtonia asiatica*, Lecythidaceae, triterpenoid saponin.

Synthesis and Characterization of Some Complexes of Strontium (II) With 1,4,7,10,13,16,-Hexaoxacyclooctadecane

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ABSTRACT:

The present paper describes the preparation and characterization of some strontium ion complexes with 1,4,7,10,13,16,-hexaoxacyclooctadecane (18-crown-6 ether) having six donor oxygen atoms. The strontium metal

compounds used for complexation are salts of nitrophenols and 8- hydroxyquinoline. Attempts were made to isolate products from strontium salt of all the three monoionic ligands, 2,4-dinitrophenol (DNPH), 2,4,6-trinitrophenol (TNPH) and 8-hydroxyquinoline (8HQH) with 18-crown-6 ether. It was found that strontium salts and 18-crown-6 ether did bind together, rather than they remain uninteracted. The product in each procedure was chromatographed using TLC. The TLC products were used to identify the interaction and formation of stable compounds. The bonding pattern and structure of complexes were suggested from the studies of elemental analysis, IR, UV and ¹H-NMR spectral analysis.

KEYWORDS: 18-CROWN-6, 8HQH, TLC

Synthesis and antimicrobial activity of new 4-thiazolidinone derivatives containing 2-amino-6-ethoxybenzothiazole

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ABSTRACT:

A novel series of Schiff bases **5a–j** and 4-thiazolidinones **6a–j** have been prepared from the building blocks 2-chloro pyridine-3-carboxylic acid [**1**] and 2-amino-6-ethoxy-benzothiazole [**2**]. All of the synthesized compounds have been confirmed by elemental analyses, IR, ¹H NMR and ¹³C NMR spectral data. These newly synthesized compounds were screened for their antimicrobial activity. Variable and modest activity was observed against the investigated strains of bacteria and fungi, however, compound **6h** revealed significant antibacterial activity against *Escherichia coli*. Compounds **1**, **2**, **3**, **5c**, **5g** and **5h**, on the other hand, revealed potent antifungal activity against *Candida albicans* compared to the reference drug greseofulvin

KEYWORDS: Schiff bases; 4-Thiazolidinones; 2-Chloro pyridine-3-carboxylic acid; 2-Amino-6-ethoxybenzothiazole; Antimicrobial activity

TLC Densitometry Method for Determination of Cinnamaldehyde in a Traditional Indian Formulation.

Ravindra Pandey, Swarnlata Saraf, S. Saraf.....1953*

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ABSTRACT:

A new, simple, sensitive, selective, precise and robust high-performance thin-layer chromatographic (HPTLC) method developed and validated for the determination of Cinnamaldehyde in Indian traditional formulation (sitopaladi churna) and crude drug extracts. Analysis was performed on TLC aluminium plates pre-coated with silica gel 60F-254 as the stationary phase. Linear ascending development was carried out in twin trough glass chamber saturated with mobile phase consisting of Toluene: Ethyl acetate: Methanol (8:1:1) at room temperature (25±2°C). Camag TLC scanner III was used for spectrdensitometric scanning and analysis in absorbance mode at 295 nm. The system was found to give compact spots for Cinnamaldehyde (R_f value of 0.55±0.02). The linear regression analysis data for the calibration plots showed good linear relationship ($r^2 = 0.996 \pm 0.0003$) in the concentration range 200–1200 ng spot⁻¹ with respect to peak area. According to the International Conference on Harmonization (ICH) guidelines, the method was validated for precision, recovery, robustness and ruggedness. The limits of detection and quantification were determined. The Cinnamaldehyde content was quantified and estimated from the formulation and the *cinnamomum zeylanicum* plant part. Statistical analysis of the data showed that the method is reproducible and selective for the quantitative determination of Cinnamaldehyde.

KEYWORDS: Cinnamaldehyde, High-performance thin layer chromatography; Indian traditional formulation; Quantitative analysis.

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