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ABSTRACT

Aminopyrimidine and its derivatives have a great biological importance .In last decades a number of compounds have been synthesized having aminopyrimidine moiety either fused with other ring system or its derivatives. These synthesized compounds show a lot of biological activity like anticancer, antimicrobial, antimalarial, antiviral and various other biological activities having importance in the treatment of diseases. Many reviews on pyrimidine are available but there is no collective information about aminopyrimidines for recent years. The purpose of present review is to provide exhaustive information about the aminopyrimidine as new target of drug synthesis.

KEYWORDS: Aminopyrimidine

- **The Aminopyrimidines-II**
Parmesh Kumar Dwivedi, Kishu Tripathi and Mamta Mishra.....365

ABSTRACT

Aminopyrimidine and its derivatives have a great biological importance .In last decades a number of compounds have been synthesized having aminopyrimidine moiety either fused with other ring system or its derivatives. These synthesized compounds show a lot of biological activity like anticancer ,antimicrobial, antimalarial, antiviral and various other biological activities having importance in the treatment of diseases. Many reviews on pyrimidine are available but there is no collective information about aminopyrimidines for recent years. The purpose of present review is to provide exhaustive information about the aminopyrimidine as new target of drug synthesis.

KEYWORDS: Aminopyrimidine

- **Apoptosis Significance and Molecular Mechanisms- A Review**
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ABSTRACT

Apoptosis, a form of programmed cell death, is a pivotal defense against the occurrence of cancer and is essential to metazoans in maintaining tissue homeostasis. Apoptosis exhibits a distinctive phenotype and involves elimination of potentially deleterious cells. Many diseases have been associated with aberrantly regulated apoptotic cell death, ultimately leading to inhibition of apoptosis and propagation of diseases such as cancer. This review highlights the significance of apoptosis, molecular mechanisms of apoptosis and various methods of causing cell death.

KEYWORDS: Apoptosis, programmed cell death, significance, mechanisms, caspases, Bcl-2 family.

- **Significance of Fluorine in Medicinal Chemistry: A Review**
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KEYWORDS: Fluorine, Haloperidol , Progabide

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ABSTRACT

Hyphenated analytical technique is online coupling of separation and detection techniques using suitable interfaces. They improve resolution and sensitivity along with decreased analysis time. Hyphenated techniques are widely used in analytical chemistry, and particularly in areas where samples are presented in complex matrices, e.g. environmental, pharmaceutical and biochemical or biomedical analysis. This review describes such advanced hyphenated analytical techniques with respect to instrumentation of techniques and applications in various areas of science.

KEYWORDS: LC-NMR-MS, LC-ESI-MS, GC-IR-MS, CE-NMR.

RESEARCH ARTICLE

- **Estimation of Rutin and Quercetin in Terminalia chebula By HPLC**
Ashok Kumar BS, Lakshman K, Jayaveera KN, Vamshi Krishna N, Manjunath M, Suresh MV, Shivatej, Hanumantha Reddy and Sudheer Naik.....388

ABSTRACT

Tannins and Flavonoids present in the *Terminalia chebula*, Flavonoids like Rutin and quercetin possess many biochemical effects like inhibition of enzymes, regulatory role on different hormones and pharmacological activities like antimicrobial, antioxidant, anticancer, antihepatotoxic, protection of cardio vascular system. An HPLC method was developed for the estimation of rutin and quercetin from methanol methanolic extract of *Terminalia chebula*

KEYWORDS: *Terminalia chebula*; Rutin; Quercetin; HPTLC; Standardization.

- **Application of Metanil Yellow for the Extractive Spectrophotometric Determination of Norfluoxetine**
Manish S Bhatia, Smita T Kumbhar, Prafulla B Choudhari and Kundan B Ingale.....390

ABSTRACT

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KEYWORDS: Spectrophotometry, Norfluoxetine, Metanil yellow, Urine.

- **Simultaneous Spectrophotometric Estimation of the Amlodipine Besylate and Hydrochlorothiazide in Pharmaceutical Preparations and Biological Samples**

Neela Manish Bhatia, Snehal Jawaharlal Deshmane, Harinath Nivrutti More, Prafulla Balkrishna Choudhari.....394

ABSTRACT

Two new simple, selective economical and reproducible UV spectrophotometric method simultaneous estimation of two component drug mixture of Amlodipine besylate (AB) and hydrochlorothiazide (HCT) in pharmaceutical preparation, blood sample and urine has been developed. The first method depends on first derivative method at 245 and 238 nm for AB and HCT also in plasma and urine respectively. The linearity over the concentration ranges 2.5-17.5 µg/ml for both the drugs AB and HCT. The second method is based on two wavelength method, which uses the difference of absorbance value at 271 nm and 395 nm for estimation of Hydrochlorothiazide (HCT) and absorbance at 363 nm for amlodipine besylate (AB). In formulation, plasma and urine Methanol: water (50:50v/v) was used as solvent, in which Amlodipine besylate and Hydrochlorothiazide shows linearity in the range of 2.5-17.5 µg/ml for both the drugs respectively. Standard deviation was <1.5 in the assay of tablets. This method validated and the result was compared statically. The %RSD value was satisfactorily low and recovery was close to 100% indicating reproducibility and accuracy of this method. Both the drug obeys Beer's law in the concentration range employed for analysis. Full analytical validation of this method performed according to International Conference on Harmonization Q2 (R1) and USFDA Bioanalytical methods guidelines. These proposed methods were found to be simple, accurate, rapid, specific, economic and advantageous in having lower limit of detection

KEYWORDS: simultaneous determination; derivative spectrophotometry and two wavelength method, Amlodipine besylate, Hydrochlorothiazide, plasma, urine.

- **Development and Validation of Method for Simultaneous Estimation of Atenolol and Lercanidipine from Tablet Dosage Form by Second Order Derivative Spectroscopy**

Neela M Bhatia and A Y Gavali.....398

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KEYWORDS: Atenolol, Lercanidipine, UV-Derivative spectroscopy, Validation

- **Screening, Identification and Quantitation of Cannabis**

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KEYWORDS: THC, Hashish, Cannabis.

- **Estimation of Cefixime and Erdosteine in its Pharmaceutical Dosage Form by Spectrophotometric Method**

Nanda RK, Gaikwad J, Prakash A, Ghosh VK and Nagore DH.....404

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KEYWORDS: Cefixime; Erdosteine; area under the curve method; derivative spectroscopy.

- **Facile and Efficient Oxidation of Sulfides to Sulfoxides Using Oxone® and its Biological Evaluation**

NS Mahajan, RL Jadhav, KK Mali, NV Pimpodkar and AM Manikrao.....407

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KEYWORDS: Antibacterial activity, antifungal activity, Oxone®, oxidation.

- **Synthesis and Biological Screening of Novel Aminoalkyl Substituted Azaphenothiazine**

P. Valentina, K. Ilango, Deepak Jain and Prerna Shukla.....411

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KEYWORDS: Azaphenothiazine, Bioavailability, Antimicrobial activity, Sedative activity.

- **Spectrophotometric and Stability Indicating RP-HPLC-PDA method for Simultaneous Determination of Finasteride and Tamsulosin in Combined Tablet Dosage form**

Atul H Kategaonkar, Dhaval M Patel, Bhushan P Itkar, Vishnu P Choudhari, Bhanudas S Kuchekar and Ana G Nikalje.....414

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performance liquid chromatographic separation was achieved on a Waters Symmetry C₁₈ column (250 mm x 4.6 mm, 5.0 μ particle size) using Methanol: Water: THF (75: 15: 10 v/v/v) mobile phase. Trifluoroacetic was used to adjusted pH to 3.7 with, flow rate was 0.7 mL/min and column temperature was maintained at 32⁰C. Quantification was achieved with PDA detector at 275 nm over the concentration range of 50 to 400μg/mL for Finasteride and 4 to 44μg/mL for Tamsulosin. Both methods have been successfully applied for the analysis of the drugs in a pharmaceutical formulation. Results of analysis were validated statistically and by recovery studies.

KEYWORDS: Spectrophotometry, Stability indicating RP-HPLC, Tamsulosin, Finasteride.

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P. Varshney Vinod Kumar and S.K. Gururani.....420

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- **Inhibitive Effect by Acid Extracts of Malachra Capitata Leaves on the Sulphuric Acid Corrosion of Mild Steel**

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KEYWORDS: *Malachra Capitata*; Acid corrosion inhibitor; electrochemical polarization; electrochemical impedance spectroscopy.

- **UV Spectrophotometric Method Development for the Determination of Domperidone in Tablet Formulation**

Kailash Nath Kaushik and Saurabh Kumar Banerjee432

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KEYWORDS: Domperidone, UV spectrophotometry.

- **Synthesis and Anti-Bacterial Study of 4-(4-Substituted Phenyl)-5,6-Disubstituted-1-(4-Substituted Phenyl Thiazol-2-yl) Pyridin-2 (1H)-One**

Vimal I Patel, Harsha U Patel, Chhaganbhai N Patel and Kiran J Suthar.....434

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KEYWORDS: Synthesis, Thiazole, β - Arylglutaconic Acid, Secondary Amines, Anti-Bacterial activity.

- **Synthesis And Anti-Bacterial Study of 6, 8- Disubstituted -3-(4-(4- Substituted Phenyl) Thiazol-2-yl)-3,4-Dihydro-2H-Benzo [E][1,3] Oxazine**

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KEYWORDS: Synthesis, Thiazole, salicylaldehyde, Anti-Bacterial activity.

- **Synthesis and Biological Screening of Some New Series of Aryl Thiazole Derivatives**

Raga Basawaraj and Majid Shabbir.....440

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KEYWORDS : Arylthiazole, Schiff's bases, Azetidiones, Thiazolidinones, Antimicrobial activity.

- **Antibacterial activity of Crude extracts and Semi synthetic Hydrazone derivatives of Rimelia reticulata**

R Meera, P Devi , B Madhumitha and B Kameswari.....445

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Anti microbial activity of Ether, Acetone Dichloromethane extract and Chloroform extracts and semi synthetic derivatives of *Rimelia reticulata* were tested against Gram(+) and Gram(-) bacteria strains using zone of inhibition by Agar disc diffusion method.. The bacteria used in test were Gram positive (*Staphylococcus aureus*, *Bacillus subtilis* and *Micrococcus luteus* and Gram negative (*Escherichia coli*, *Salmonella typhi* and *Pseudomonas aureginosa*). Moderate antibacterial activity for Ether and Dichloromethane extract, and in Chloroform extract having more than 100% activity

and Acetone extract having (90%) activity in Gram (+) organism. In Gram(-) all the extracts having moderate activity (80%). In Semi synthetic derivatives of *Rimelia reticulata* the Gram (+) and Gram (-) organisms are used. Among the four derivatives 2,4 di nitro hydrazine derivative has more than (100%) activity and 4 nitro phenyl hydrazine, phenyl hydrazine having moderate (80%) activity against Gram (+). In Gram (-) Hydrazine hydrate has shown more than (100%) and Phenyl hydrazine, 4 nitro phenyl hydrazine having (90%) activity. The standard drug used in this activity is Lincomycin. Based on the current findings it can be concluded that the lichen *Rimelia reticulata* posses potent antibacterial activity.

KEYWORDS: *Rimelia reticulata*, Antibacterial activity, Agar disc diffusion method, crude extracts, Semisyntheticderivatives.

- **Synthesis and SAR Study of Some New Benzhydryl Piperazine Sulfonamide and Carboxamide as Antimicrobial Agents**

Patel R.C, Patel C.N, Panigrahi B.B. and Bhaskar V.H......448

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KEYWORDS: Benzhydrol, acid chloride, sulfonyl chloride, antimicrobial screening.

- **Spectrophotometric Method for Estimation of Quetiapine Fumarate in Bulk and Dosage Form**

R.Xavier Arulappa, M.Sundarapandian, Rithesh Singh, and S.Venkataraman.....452

ABSTRACT

A simple, precise and accurate spectrophotometric method has been developed for the determination of Quetiapine fumarate in bulk drug and pharmaceutical dosage form. Standard stock solution was prepared in distilled water and further dilution was carried out with distilled water. The λ_{max} of Quetiapine fumarate was found to be 290nm. The A(1%,1cm) value of Quetiapine fumarate was found to be 186.22 ± 3.11 . Calibration graph was linear over the range of 5-25 $\mu\text{g/ml}$. The correlation coefficient (r) was found to be 0.9997. The limit of detection (LOD) and limit of Quantification (LOQ) was found to be 0.41 $\mu\text{g/ml}$ and 1.25 $\mu\text{g/ml}$ respectively of Quetiapine fumarate. The result of estimation in marketed tablet formulations were found to be 100.64 ± 0.18 and 101.32 ± 0.35 . The proposed method was applied successfully for the determination of Quetiapine fumarate in tablets with average recovery of 102 ± 1.14 and 98.8 ± 1.10 . The method was then validated statistically as per ICH guidelines, which yielded good results concerning range, linearity, precision and accuracy.

KEYWORDS: Quetiapine fumarate, spectrophotometry.

- **Determination of Entacapone in Pharmaceutical Preparations by Liquid Chromatography**

P Nagaraju, D Narendra, P Jitendra Kumar, VDN Srinivas and SVN Padma.....454

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KEYWORDS: Estimation, entacapone, tablets and HPLC

- **Synthesis and Biological Evaluation of Some 2-(N-Substituted Hydrazino)-N-[4-(5-methyl benzoxazol-2-yl)-Phenyl]-acetamide.**

Shelly thomas, Geetha KM and V Murugan.....457

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KEYWORDS: Benzoxazole derivatives, Anti-inflammatory, Antimicrobial activity.

- **Simultaneous Spectrophotometric Estimation of Abacavir sulfate and Lamivudine in Tablet Dosage Form**

Mirza Shahed, Palaskar Pallavi S, MHG Dehghan and SN Mokale.....461

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KEYWORDS: Abacavir sulfate, Lamivudine, Simultaneous equation method and Q-Analysis method.

- **Spectrophotometric Estimation of Valsartan in Tablet Dosage Form**

Sharma M, Sharma A, Jain A and Banerjee PS.....464

ABSTRACT

Valsartan, an angiotensin receptor blocker, has been widely used for the treatment of hypertension, heart failure and heart attacks. Two rapid, sensitive and reliable UV-Spectrophotometric (Method A) and first order derivative (Method B) have been developed for estimation of valsartan in bulk and tablet. In methanol, the λ_{\max} of valsartan was found to be 249 nm. The same spectra was derivatised into first order derivative, at $\Delta\lambda = 2$; the amplitude of the through was measured at 268nm. The linear concentration ranges were 5-50µg/ml for both the methods. The results of analysis were validated statistically. The Relative standard deviations for all the parameters were found to be less then the 5%. The method herein described can be employed for quality control and routine analysis of drugs in pharmaceutical formulations.

KEYWORDS: Valsartan; First order derivative method; UV spectrophotometric method.

- **Spectrophotometric Determination of Meloxicam in Bulk Drug and Pharmacuetical Formulations**

M.Sundarapandian, S.Venkataraman, R.Xavierarulappa, M.Boopathi and S.Selvakumar.....467

ABSTRACT

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KEYWORDS: Meloxicam, Bromo cresol green, Spectrophotometry.

- **RP-HPLC Method for Simultaneous Determination of Ofloxacin and Satranidazole in Tablet Dosage Form**

T Venkatachalam, S Narendiran, P Kalai Selvi and P Dheen Kumar.....469

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A simple, precise, accurate and rapid HPLC method has been developed, and validated for the determination of ofloxacin and satranidazole simultaneously, in combined dosage form. Acetonitrile and ammonium di-hydrogen orthophosphate buffer with pH 7.0 (50%:50%) is used as the mobile phase, 300 is the detection wavelength for this study. The applicability of the method for simultaneous determinations of ofloxacin and satranidazole was verified by the determination of these compounds in marketed tablets. Results of the analysis were validated statistically, and by recovery studies (99.43-101.28 %). The recovery and RSD values within limits given in ICH guidelines method developments indicates that the suitability of proposed for the routine determination of these compounds in tablets. The validation parameters; linearity (r=9999) sensitivity (LOD (1.0 -1.5×10⁻⁴), LOQ(3.0-4.5×10⁻⁴) accuracy(99.43 -101.28 %) and reproducibility were found to be satisfactory. The proposed method can be successfully used to determine the drug contents of marketed formulation.

KEYWORDS: RP-HPLC, Ofloxacin, Satranidazole, Validation

- **Microwave-Assisted Synthesis and Antibacterial Activity of Some New Flavones and 1, 5-Benzothiazepines**

VA Navale, SS Mokle, Archana Y Vibhute, KG Karamunge, SV Khansole, SB Junne and YB Vibhute.....472

ABSTRACT

The synthesis of heterocyclic compounds containing flavones(4a-i) and 1,5-benzothiazepines(5a-i) from chalcone derivatives containing 3,4-methylenedioxy phenyl ring using microwave irradiation in 80-97% yield within 2 – 4 min. The work-up is simple, shorter reaction time, increase in reaction rate with better yields. The structures of synthetic compounds have been characterized using IR and ¹H NMR spectral data together with halogen analysis. All synthesized compounds have been screened for their antibacterial activity.

KEYWORDS: Chalcones, flavones, 1,5-benzothiazepines, microwave irradiation, antibacterial activity.

- **Spectrophotometric and Spectroscopic Studies of Charge Transfer Complexes of m-Nitroaniline as an Electron Donor with Picric Acid as an Electron Acceptor in Different Polar Solvents**

Neeti Singh, Ishaat M Khan and Afaq Ahmad476

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(K_{CT}) and molar extinction coefficient (ϵ_{CT}), standard free energy (ΔG^0), oscillator strength (f), and transition dipole moment (μ_{EN}) were calculated. The spectrum obtained from the complex of picric acid and m-nitroaniline shows absorption bands at 450 nm for methanol, 445nm for ethanol and 440nm for acetone. The results reveal that the interaction between the donor and acceptor is due to π - π^* transitions. The stoichiometry of the complexes was found to be in the ratio of 1:1 by straight line method. The influences of used solvents such as acetone, ethanol, and methanol, on spectroscopic parameters were investigated. The ionization potential (I_D) of the donor was also determined.

KEYWORDS: Charge transfer complex ; m-Nitroaniline (MNA); Picric acid (PiOH); Visible region; formation constant; FTIR spectroscopy

- **RP HPLC Determination of Atenolol in Its Pharmaceutical Dosage Forms**

Amrish Sharma, Mukul Tailang, Sonali Khare and Tripti Shukla.....485

ABSTRACT

A new and simple reverse phase HPLC method was developed for the estimation of atenolol in its pharmaceutical dosage forms. The mobile phase used acetonitrile, methanol, KH_2PO_4 is in the ratio of 250:250:500. Buffer solution was prepared by dissolving 0.05M KH_2PO_4 + 0.1% H_3PO_4 adjunct with triethylamine. The separation was achieved on hypersil C-18 column, phenomenex Gemini(250 \times 4.6mm) and 5 μ particle size with rheodyne injector. The flow rate was 1ml/min and uv detection at 238nm. The retention time for atenolol was 4min respectively. The linearity coefficient of atenolol was found to be 0.99% and the percentage recoveries for atenolol is 99.89%. The proposed method was accurate, precise and linear within the desired range. This method can successfully employed for the quantitative analysis of atenolol.

KEYWORDS: RP HPLC, Validation, Atenolol.

- **Development of Spectrophotometric Method for Simultaneous Estimation of Flupenthixol HCl and Melitracen HCl in Their Combined Dosage Form**

Imran A Sheikh, Manoj Charde and Avinash V Kasture.....488

ABSTRACT

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

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

- **Synthetic Process Study and Pharmacological Evaluation of Antispasmodic Drug as Potential Antimicrobial Agent**

Pai Nandini and Dubhashi Deepnandan.....494

ABSTRACT

Antibiotics medication is prescribed against bacterial infections. Several drug molecules are known to possess antimicrobial activity in addition to their known pharmacological actions like antihistamines, tranquilizers, antihypertensive, antipsychotics and anti-inflammatory agents. In a quest to explore a newer antimicrobial drug, the present study proposes a novel synthetic process for 3, 4-dimethoxybenzoic acid 4-[ethyl {2-(4-methoxyphenyl)-1-methylethyl} amino] butyl ester hydrochloride, a potential antispasmodic drug which is expected to exhibit antimicrobial

potency may be due to two benzene rings and secondary or tertiary nitrogen in the core molecule structure. The structure and purity of the synthesized drug was established by spectral, elemental and chromatographic techniques. It was evaluated for antimicrobial potency in vitro and in vivo. The minimum inhibitory concentration (MIC) of the drug against the bacteria was determined by agar and broth dilution methods in vitro. The antibacterial activity was confirmed by animal experiments. Toxicity and protective efficacy of the drug were tested in vivo. The drug inhibited most of the bacterial isolates tested at 25-100 µg/ml concentration and a few were sensitive even at a lower concentration (10 µg/ml). It was found to be bacteriostatic against "Shigella dysenteriae 7", and bactericidal against "S. aureus NCTC 6571,8530 and 8531". When administered to Swiss white mice the drug protected the animals challenged with 50 MLD of "Salmonella typhimurium NCTC 74". The drug showed inhibitory action against several pathogenic bacteria. It also offered significant protection to mice against the bacterial challenge.

KEYWORDS: Protective Efficacy • bacteriostatic • bactericidal • Pathogenic bacteria

• **Physio-Chemical investigation and Wound healing activity of Sesame oil and Formulated oil**

R Badmanaban1, CN Patel, P Devi, R Meera, B Kameswari and B Eswarapriya.....501

ABSTRACT

Formulated oil a Siddha formulation was developed using two plant drugs namely *Pongamia pinnata* seeds and *Boerhaavia diffusa* roots. Preliminary physio chemical screening was performed in both the plants. The wound healing activity was studied with comparison of Sesame oil and Formulated oil by using standard nitro furazone ointment.. The methods used were Excision wound model, Incision wound model and Dead space wound model. In excision and incision wound model the formulated oil treated group showed much greater increase in the tensile strength when compared to the control, which was almost similar to that of nitro furazone . In the dead space wound model both the sesame oil and formulated oil produced a significant increase in the wet granuloma tissue weight as well as in the dry weight .Tensile strength was also found to be increased (P<0.001) in both of the oil treated groups.

KEYWORDS: *Pongamia pinnata*, *Boerhaavia diffusa*, Sesame oil, Formulated oil, Wound healing activity.

• **Determination of Telmisartan in Solid Dosage Form by RP-HPLC**

NR Vekariya, GF Patel and Rohit B Dholakiya.....506

ABSTRACT

A simple, precise, rapid and accurate reverse phase HPLC method developed for the estimation of Telmisartan in tablet dosage form. Luna 5 µ C₁₈, 250 × 4.6 mm, particle size 5 µm, with mobile phase consisting of 5 mM Phosphate buffer: Acetonitrile (60:40, v/v), pH 7.4 was used. The flow rate was 1 ml/min and the effluents were monitored at 295 nm. The retention time was 7.02 min. The detector response was linear in the concentration of 2-14 µg/ml. The respective linear regression equation being Y=61480X-10188. The limit of detection and limit of quantification was 0.06 and 0.18 mcg/ml respectively. The percentage assay of Telmisartan was 100.28 ± 0.93 %. The method was validated by determining its accuracy, precision and system suitability. The results of the study showed that the proposed RP-HPLC method is simple, rapid, precise and accurate, which is useful for the routine determination of Telmisartan in bulk drug and in its pharmaceutical dosage form.

KEYWORDS: RP-HPLC, Telmisartan, Validation

• **Pharmacognostic and Phytochemical Evaluation of *Quirivelia frutescens* (Apocynaceae)**

Rukhsana A. Rub, Asma Mukadam, Javed Pinjari, Ajaz Nathani and Aaisha Sagri.....509

ABSTRACT

Quirivelia frutescens (Apocynaceae) also known as kalidudhi or shymlata is much branched twining shrub of West Bengal. It is used by natives as wound healing, digestive.etc. However the plant is not much explored pharmacognostically and phytochemically, therefore the aim of this study was to evaluate pharmacognostic and phytochemical characteristics

of plant *Quirivelia frutescens*. Microscopy of leaves showed distinct bicollateral vascular bundle, single layer of palisade, and well defined anomocytic stomata. Presence of calcium oxalate crystal in the form of thin pointed needle and xylem vessels with circular bordered pits were observed in the stem.

The total ash, acid insoluble and water-soluble ash were found to be within the limit as compared to other plants belonging to Apocyanaceae family. The preliminary phytochemical studies indicated the presence of alkaloids and tannins. Phytochemical analysis, like TLC, UV, IR NMR, GCMS, were carried out by using the extract of stem. In TLC, the R_f value was found to be 0.77, which is near to many alkaloids. In C_{13} NMR, the peak showed the presence of unsaturation between conjugated carbon of alkaloid and steroid group and saturated ring substituted with aliphatic chain. GCMS study showed the presence of eight chemicals constituent in the extract. In UV, the λ_{max} was found between 331 to 337 nm and peak indicated the presence of unsaturation.

Thus, from the above study, it can be concluded that the plant *Quirivelia frutescens*, has rich content of alkaloid, steroid and tannins.

KEYWORDS: *Quirivelia frutescens*, Apocyanaceae, R_f value, Anomocytic stomata, alkaloid, steroids, tannins

• **Synthesis and Biological Evaluation of New Benzothiazole Derivatives**

Vrushali N Patil, Ameya Yadav, AS Bobade, SV Athlekar, LS Patil and Abhay Chowdhary.....513

ABSTRACT

A series of 2-N-acetyl-[2'-(thieno substituted aryl ketone)-5'-methyl-1',3',4'-oxadiazolyl] benzothiazole (**5a-e**) have been synthesized. These structures are determined by the elemental analysis 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: 2-amino benzothiazole, 1,3,4-oxadiazole, anti-bacterial, anti-fungal.

• **Synthesis and Antimicrobial Activity of Some Benzimidazolyl Pyrazolone Derivatives**

Ameya G Yadav, Vrushali Patil, AS Bobade, SV Athlekar, LS Patil and Abhay Chowdhary*.....516

ABSTRACT

A series of 2-(1H- benzimidazol-2-ylmercapto)-N-[1,5-dimethyl-2-(substituted)phenyl-3-oxo-2,3-dihydro-1H-pyrazol-4-yl] acyl amines (**5a-h**) 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: Benzimidazole, Pyrazolone, anti-bacterial, anti-fungal.

• **Simultaneous Determination of Valsartan and Nebivolol HCl in Tablet Dosage Form by RP-HPLC**

Sachin R Shinde, Suvarna I Bhoir, Namdev S Pawar, Suman B Yadav, Ajay S Ghumatkar and Ashok M Bhagwat.....519

ABSTRACT

A simple, fast and precise reversed phase high performance liquid chromatographic method is developed for the simultaneous determination of valsartan and nebivolol in tablet dosage form. Chromatographic separation of these drugs was performed on Kromasil C_{18} column (250 X 4.6 mm, 5 μ) as stationary phase with a mobile phase comprising of 20 mM potassium dihydrogen orthophosphate: acetonitrile in the ratio of 43:57 (v/v) containing 0.1% glacial acetic acid at a flow rate of 1 ml/min and UV detection at 282 nm. The linearity of valsartan and nebivolol were in the range of 40 to 96 μ g/mL and 2.5 to 6.0 μ g/mL respectively. The recovery was calculated by standard addition method. The average recoveries were found to be 99.32 % and 99.38 % for valsartan and nebivolol respectively. The proposed method was found to be accurate, precise and rapid for simultaneous determination of valsartan and nebivolol.

KEYWORDS: Valsartan, Nebivolol, RP-HPLC, Tablet

- **Synthesis, Identification of Some P-Chiral Organic Phosphoramidates and Their Inhibitory Action towards Enzymes**

Soram Ibomcha Singh and Shashi Prabha.....523

ABSTRACT

Phosphoramidates (N-P) are biologically active organic compounds because they are capable of inhibiting enzyme action. A few members of this class were synthesized and checked for their anticholinesterase properties and they were found to be a good reactive phosphorylating agent to block AChE rather than BuChE in the poisoning process. The presence of chloro-substituent (either ortho- or para-) in the aryl moiety of these phosphoramidates does not show any significant contribution during toxicological study made in vitro. These phosphoramidates were characterized by FT-IR, ³¹P NMR and GC-MS spectral studies.

KEYWORDS: Phosphorylation, phosphoramidates, anticholinesterase, ³¹P NMR, toxicity

- **Spectrophotometric Methods for Simultaneous Estimation of Rabeprazole and Ondansetron from Combined Tablet Dosage Form**

Vankar Kaushik Kumar, Nayak Diptish Kumar and Shrivastava Alankar.....526

ABSTRACT

Simple, accurate, economical and reproducible spectrophotometric methods for simultaneous estimation of Rabeprazole and Ondansetron in combined tablet dosage form have been developed. The developed method employs formation and solving of simultaneous equation using two wavelengths 284.4 nm and 302.0 nm for formation of simultaneous equation. This method obeys Beer's law in the employed concentration ranges. Results of analysis were validated statistically and by recovery studies.

KEYWORDS: Spectrophotometric estimation, Rabeprazole, Ondansetron

- **Synthesis and Biological Screening of Some Novel 4-Thiazolidinone Derivatives**

P Muthumani, R Meera, Pratesh, N Chidambaranathan, P Devi and Bkameswari.....529

ABSTRACT

A new series of substituted 4-thiazolidinones were synthesized by cyclization of Schiff's bases with thiooglycollic acid. The substituted schiff's bases were synthesized starting from substituted benzoic acid with thionyl chloride in 3 steps. The structures of the synthesized compounds have been established on the basis of physical and spectral data and are screened for anticonvulsant, antibacterial and anti hyperglycemic activities; some of them exhibited significant activity.

KEYWORDS: Substituted 4-thiazolidinones, Anticonvulsant, Anti hyperglycemic, Anti bacterial.

- **Syntheses, Characterization and Biological Screening of Some Novel 1, 2, 4-Triazoles**

Ram Janam Singhand Dharmendra Kumar Singh.....536

ABSTRACT

A series of 3-alkylthio-5-pyridyl-1, 2, 4-triazoles were prepared as possible biological active agents. All the title compounds were characterized on the basis of IR, PMR, Mass spectra and elemental analyses. All compounds carrying alky substituents at position three and the 1, 2, 4- triazole moiety at position one or two showed reasonable anti-inflammatory activity.

KEYWORDS: 1, 2, 4-triazole, 1-picolinoylthiosemicarbazides, alkylation, anti-inflammatory activity.

- **Inclusion Complexes of Acridone and Its Semicarbazone Derivative With β - Cyclodextrin: - A Thermodynamic, Spectral and Antimicrobial Study**

Sunakar Panda and Swapna Sankar Nayak.....539

ABSTRACT

Both acridone and its semicarbazone derivative being insoluble in polar medium, may have poor pharmacological activity. To enhance bio-accessibility of these drugs, the inclusion complexes of acridone and its derivative have been prepared with β - cyclodextrin. The spectral characteristics (UV-Vis, FTIR) of these compounds have been studied with and without inclusion complex formation. The phase solubility studies reveal 1:1 stoichiometry between guest and host. The determination of thermodynamic stability constants indicates weak intermolecular forces between the compounds and β -cyclodextrin. The thermodynamic parameters ΔG , ΔH , ΔS of the complexes have been calculated, the values of which suggest that complex formation is spontaneous and exothermic in nature. The antimicrobial activity of acridone and its semicarbazone derivative along with their inclusion complexes against the microbes like *Escherichia coli* and *Pseudomonas aeruginosa* have been studied.

KEYWORDS: Acridone semicarbazone, Inclusion complex, Thermodynamic stability, Antimicrobial study.

- **Synthesis and Antibacterial Evaluation of Some Novel Phenylthiazolyl-Quinazolin-4(3H)-One Derivative**

Hemant Badwaik, Sandeep Sonkar, Mukesh Singh, Suresh Rajpal, Dharamveer Sisodiya and Ajit Pandey.....544

ABSTRACT

The present work deals with synthesis and evaluation of some novel phenylthiazole and quinazoline combination derivatives of biological interest. The reaction of acetophenone with thiourea formed 4-phenylthiazol-2-amine (I) was refluxed with N-chloroacetyl anthranilic acid (II) in the presence of K_2CO_3 in dry ethanol under anhydrous condition yields 2-chloromethyl-3-[4-(phenyl)thiazol-2-yl]-quinazolin-4(3H)-one(III). The 2-chloromethyl-3-[4-(phenyl)thiazol-2-yl]quinazolin-4(3H)-one(III) and respective aromatic amines was refluxed in dry pyridine and acetic anhydride formed N-3-[4-(4-phenyl)thiazol-2-yl]-[2-(substituted amino)methyl]quinazolin-4(3H)-one derivatives (IV). The synthesized compounds are to be screened for antibacterial activity.

KEYWORDS:

- **Development and Validation of UV Spectrophotometric Method of Ambroxol Hydrochloride in Bulk and Pharmaceutical Formulation**

Chhotaram Seervi, Kundan Pawar, PN Dhabale, ID Gonjari, Chandrakant Raut and Deepali Garge.....547

ABSTRACT

Two simple, precise and economical UV methods have been developed for the estimation of Ambroxol Hydrochloride in bulk and pharmaceutical formulations. Ambroxol Hydrochloride has the absorbance maxima at 246.5nm (Method A), and in the first order derivative spectra showed sharp peak at 240 nm (Method B). Linearity for detector response was observed in the concentration range of 10-50 $\mu\text{g/ml}$ for all two methods. The proposed methods were successfully applied for the estimation of Ambroxol Hydrochloride in commercial pharmaceutical preparation by using simple solvent Distilled water. The results of the tablet analysis were validated with respect to accuracy (recovery), linearity, Limit of Detection and Limit of Quantification and specificity were found to be satisfactory.

KEYWORDS: Ambroxol Hydrochloride, UV spectrophotometry, Absorbance maxima, Derivative spectroscopy.

- **Synthesis and Antimicrobial Evaluation of Some New Substituted 1,3-Diaryl-2-Propene-1-Ones**

Seema I Habib, Shankaraiah G Konda, Mohammed A Baseer and Prafullkumar A Kulkarni.....550

ABSTRACT

A series of 1, 3-diaryl-2-propene-1-ones have been synthesized by using conventional Claisen-Schmidt condensation method in alkaline methanolic solution. The structures of the products were confirmed by spectral analysis (IR, ¹H NMR and Mass). All the newly synthesized compounds were screened for their antibacterial and antifungal activity.

KEYWORDS:

- **Simple Validated Spectroscopic Method for Estimation of Amlodipine Besylate from Tablet Formulation**

Pallavi Salve, Deepali Gharge, Rupali Kirtawade, Pandurang Dhabale, Kishor Burade.....553

ABSTRACT

Amlodipine Besylate is a Calcium channel blocker, anti-hypertensive agent. Various methods for analysis of the same are available but are time consuming and expensive. Here we have developed a new, precise and simple UV spectrophotometric method for estimation of Amlodipine Besylate from tablet formulation. The drug obeyed the Beer's law and showed good correlation. Absorption maxima of Amlodipine in double distilled water was found to be at 239 nm. Beer's law was obeyed in concentration range 2 – 12 mcg/ml. The results of analysis were validated by recovery studies. The recovery was more than 99%. The method was found to be simple, accurate, precise, economical and robust.

KEYWORDS: Amlodipine Besylate, UV spectrophotometry, Recovery, Accuracy

- **Synthesis and Evaluation of Some New Substituted Phenylthiazole Derivatives and their Anticonvulsant Activity**

Shashikant R Pattan, Nachiket S Dighe, Anand A Bukitagar, Prerana A Chavan, Snehlata K Tambe, Deepak S Musmade and S V Hiremath.....556

ABSTRACT

A new series of substituted phenylthiazole derivatives were synthesized and the structures of these compounds were established on the basis of spectral and elemental analysis. All the compounds were evaluated for anti-convulsant activity by Maximal Electroshock Induced Convulsions in Rats, Pentylene-tetrazole- Induced Convulsions in Rats, and Strychnine Induced Convulsions in Rats methods. Compounds C₁, C₂, C₃, C₄, C₅, D₁, D₂, D₃, D₄, D₅, E₁, E₂, E₃, and E₄ have been found to exhibit excellent anti-convulsant activity.

KEYWORDS: Phenylthiazole, Anti-convulsant.

- **RP-HPLC Method for the Estimation of Domperidone in Bulk and Pharmaceutical Formulations**

Y Rajendraprasad, KK Rajasekhar, V Shankarananth, S Bharath kumar, G Dileep kumar and T Sreelekha.....561

ABSTRACT

The Present work describes a simple reverse phase HPLC method for the estimation of Domperidone in bulk and pharmaceutical formulations. The estimation was carried out on Gemini, Phenomonex, C-18 (250x4.6 mm, 5μ) column using a mobile phase consisting of potassium dihydrogen phosphate buffer-Acetonitrile-Methanol (40:30:30). The eluent was monitored at 288 nm. The results have been validated statistically and recovery studies confirmed the accuracy of proposed method.

KEYWORDS: HPLC estimation, Validation, Domperidone and Pharmaceutical formulation.

- **Purification and Characterization of GroES and GroEL from Genetically Modified Strain E. coli U1/Pus01/Puss1ΔCat**

Alok Kumar Verma and GP Pal.....565

ABSTRACT

In Present study our aim is to purify and characterize GroES and GroEL from genetically modified strain *E.coli* U1/pUS01/pUSS1ΔCAT L .GroES was eluted at 0.2M NaCl and GroEL was at 0.3M NaCl. From 1.4 litres culture 7.5mg GroEL and 50mg GroES was purified.

KEYWORDS: Cheperonin, GroEL, GroES, IPTG, Q-Sepharose FF, Sephacryl S-200 HR.

- **α- Amyrin Caprylate - A New Triterpene Isolated From the Leaf of *Bauhinia purpurea* linn**

Tekeshwar Verma, Chandrashekar KS and Arun B Joshi.....569

ABSTRACT

Bauhinia purpurea, a useful medicinal plant was subjected to phytochemical investigation. A new ursane triterpenes α-amyirin caprylate (compound 1) was isolated along with other triterpenoids from petroleum ether fraction of ethanolic extract (95%) of leaf of *Bauhinia purpurea*. Their structures were elucidated with the help of physico-chemical methods and spectroscopic techniques. All of these triterpenes from this plant are being reported for the first time.

KEYWORDS: Fabaceae, α- amyirin caprylate, triterpenes.

- **New Naphthalene Derivatives from *Heliotropium ovalifolium* Forssk**

A Suthar, V Gaja, G Pardeshi, K Katkar, V Naik, T Mane, R Kshirsagar, R Vishwakarma and VS Chauhan.....571

ABSTRACT

New naphthalene derivatives 4,7,8-Trimethoxy-naphthalene-2-carboxylic acid and 6-Hydroxy-5,7-dimethoxy-naphthalene-2-carbaldehyde were isolated from the aerial part plant of *Heliotropium ovalifolium* Forssk.. Their structures were elucidated on the basis of various spectroscopic methods.

KEYWORDS: *Heliotropium ovalifolium*; 4,7,8-Trimethoxy-naphthalene-2-carboxylic acid and 6-Hydroxy-5,7-dimethoxy-naphthalene-2-carbaldehyde; Spectroscopic methods

- **Development and Validation of HPTLC Method for Simultaneous Estimation of Omeprazole and Ondansetron in Tablet Dosage Form**

Zarna Dedania, Ronak Dedania, G Vidhyasagar, Bhavna Patel, Chetan Ramolia and Vaishali Karkhanis.....574

ABSTRACT

A simple, precise, sensitive, rapid and reproducible HPTLC method for the simultaneous estimation of the omeprazole and ondansetron in tablets was developed and validated. This method involves separation of the components by HPTLC on precoated silica gel G₆₀F254 plate with solvent system of methanol: ethyl acetate: toluene(2:6:2 % v/v) and detection was carried out densitometrically using a UV detector at 280 nm in absorbance mode. This system was found to give compact spots for omeprazole (R_f value of 0.68±0.02) and for ondansetron (R_f value of 0.17±0.02). Linearity was found to be in the range of 1000-3500 ng/spot and 1000-3500 ng/spot for omeprazole and ondansetron respectively. The limit of detection and limit of quantification for omeprazole were 123.42 and 374.01 ng/spot and for ondansetron were 134.63 and 407.97 ng/spot, respectively. The method was found to be beneficial for the routine analysis of combined dosage form.

KEYWORDS: Simultaneous Estimation; HPTLC; Omeprazole; Ondansetron;

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