

RESEARCH ARTICLE

- **Synthesis and In Vitro Antimicrobial Activity of Some New 4-Amino-N-(1,3-Benzothiazol-2-yl) benzenesulphonamide Derivatives**

KP Bhusari, ND Amnerkar, PB Khedekar, MK Kale and RP Bhole.....53

ABSTRACT

A series of sulphonamide derivatives having benzothiazole nucleus have been synthesized by condensation of 2-aminobenzothiazole with 4-acetamidobenzenesulphonyl chloride derivatives in pyridine-acetic anhydride mixture. The identity of the compounds 4-acetamido-N-(1, 3-benzothiazol-2-yl) benzene sulphonamide and 4-amino-N-(1,3-benzothiazol-2-yl)benzene-sulphonamide has been characterized by elemental analysis and spectral data. All the test compounds have been assayed *in vitro* for antibacterial activity against *B. subtilis* and *E. coli*, antifungal activity against *C. albicans* and the antimycobacterial activity against H₃₇Rv strain of *mycobacterium tuberculosis*. The test compounds showed significant antibacterial, antifungal and antimycobacterial activity against the microbial strains used.

KEY WORDS Benzothiazole, Sulphonamide, Antimicrobial activity

- **Reactivity ratios, thermal and di-electrical properties of 1, 11 azobis (cyclohexanecarbonitrile) initiated nitrile copolymer**

K Rajani Kumar, SK Feroz and P Raghunath Rao58

ABSTRACT

Copolymer of acrylonitrile (AN) with vinyl propionate (VP) was synthesized by free radical polymerization using 1, 1' azo bis-cyclohexanecarbonitrile (VAZO) as initiator in dimethyl formamide (DMF) at 60±1 °C. The monomer reactivity ratio was computed by both Fineman-Ross (F-R) and Kelen-Tudos (K-T) methods. The reactivity ratio values suggest the formation of random copolymers which has been supported by the azeotropic composition evaluation. The mean sequence length (\bar{n}_i) and probabilities (p) in the formation of various structural units were evaluated. The molecular weights of the polymers were determined by gel permeation chromatography, which increase with the increase of the AN content. The solubility parameters were determined with the viscometric method. The glass transition temperature (T_g) of the copolymers were determined by differential scanning calorimetry (DSC). Thermogravimetric analysis (TGA) of the copolymer was also studied. The di-electrical property of the copolymer is also studied.

KEY WORDS Vinyl propionate / Reactivity ratios / Thermal properties and Di-electrical property

- **Spectrophotometric Methods for the Determination of Atorvastatin Calcium in Pure and It's Pharmaceutical Dosage Forms**

P. Nagaraju, Pasumarthy, NV Gopal, VDN Srinivas and SVN64

ABSTRACT

Three simple, sensitive and cost effective Spectrophotometric methods are developed for the determination of Atorvastatin calcium in pure and its pharmaceutical formulations. These methods are based on the oxidation of Atorvastatin calcium by ferric chloride in presence of o-phenanthroline (Method A) or 2, 2'bipyridyl (Method B) or potassium ferricyanide (Method C). The colored complex formed was

measured at 509, 520 and 735.5 nm for method A, B and C respectively against the reagent blank prepared in the same manner. The optimum experimental parameters for the color production are selected. Beer's law is valid within a concentration range of 20-100 µg/ml, 30-150µg/ml and 10-50 µg/ml for method A, B and C respectively. The mean percentage recoveries are 99.82, 100.1, 99.86 for method A, B and C respectively. The developed methods are applied for the determination of Atorvastatin calcium in bulk and its pharmaceutical formulations without any interference from excipients.

KEY WORDS Spectrophotometry, Atorvastatin calcium

- **Design and Synthesis of Some Novel Chalcones as Potent Antimicrobial Agent**
Bhagyesh Baviskar, Sureshbhi Patel, Bhushan Baviskar, SS Khadabadi and Mahendra Shiradkar67

ABSTRACT

Some novel chalcones were synthesized by condensation of N-(4-phenylthiazol-2-yl) acetamide with aromatic aldehydes in presence of aqueous potassium hydroxide solution at room temperature. All the title compounds characterized on the basis of their IR, ¹H NMR spectroscopic data and elemental analysis. All the compounds have been screened for antimicrobial activity by the cup-plate method.

KEY WORDS Synthesis, Thiazole, Chalcones, Aldehydes, Antimicrobial activity.

- **Estimation of Bisoprolol Fumarate in Pharmaceutical Preparations by HPTLC**
RB Kakde, VH Kotak and DL Kale70

ABSTRACT

A novel analytical method for determination of bisoprolol fumarate in tablet dosage form has been developed by HPTLC procedure, using Methanol: Toluene: Ammonia (2:4:0.1, v/v/v) as mobile phase and Merck HPTLC plate precoated 60 F₂₅₄ silica gel on aluminum sheet as stationary phase. Detection was carried out densitometrically using UV detector at 229 nm. The retention factor (R_f) of bisoprolol fumarate was 0.52±0.02. The linear regression analysis data was used for the regression line in the range of 500-1000 ng/spot for bisoprolol fumarate with correlation coefficient value close to 1.0. The developed method was validated using various validation parameters such as accuracy, precision, specificity, limit of detection, limit of quantitation and ruggedness, which make method as choice for routine quality control analysis for estimation of bisoprolol fumarate in tablet formulation.

KEY WORDS Bisoprolol fumarate, HPTLC, Development, Validation

- **Absorption Correction Method for Estimation of Nebivolol and Hydrochlorothiazide in Combined Tablet Dosage Form**
PS Tarte, SP Wate, PB Khedikar and G Pawnikar74

ABSTRACT

A new, simple, accurate and sensitive UV-spectrophotometric absorption correction method has been developed for simultaneous determination of Nebivolol and Hydrochlorothiazide in combined pharmaceutical dosage form. The method is based upon determination of Nebivolol at 281 nm and Hydrochlorothiazide at 316.5 nm, in aqueous methanol (20 % v/v). . Nebivolol hydrochloride and Hydrochlorothiazide at their respective λ_{max} 281.0 nm and 316.5 nm shows linearity in the concentration range of 5-35 µg/ml and 10-70 µg/ml respectively. The method was validated statistically.

KEY WORDS Nebivolol, Hydrochlorothiazide, absorption correction method, standard addition

- **Simultaneous Estimation of Nebivolol and Hydrochlorothiazide in Combined Tablet Dosage Form by Multicomponent Mode of Analysis**
PS Tarte, SP Wate, PB Khedkar, BT Satpure and G Pawnikar77

ABSTRACT

A simple, accurate, precise and economical procedure for simultaneous estimation of Nebivolol hydrochloride and Hydrochlorothiazide in two component tablet dosage form has been developed utilizing concept of standard addition. The method is based upon determination of Nebivolol at 281 nm and Hydrochlorothiazide at 272 nm, in aqueous methanol (20 % v/v). Nebivolol hydrochloride and Hydrochlorothiazide at their respective λ_{max} 281.0 nm and 272.0 nm shows linearity in the concentration range of 5-35 $\mu\text{g/ml}$ and 10-70 $\mu\text{g/ml}$ respectively. The method was validated statistically. Recovery study was performed to confirm the accuracy of the method.

KEY WORDS Nebivolol hydrochloride, Hydrochlorothiazide, simultaneous estimation

- **Spectrophotometric Estimation of Mesalazine in Tablet Dosage Form**
Prakash A, Lone KD, Shukla A, Mandloi R and Ghosh V..... 80

ABSTRACT

Three simple, precise and economical UV methods have been developed for the estimation of Mesalazine in tablet dosage form. Mesalazine has the absorbance maxima at 303.5 nm (Method A), and in the first order derivative spectra, showed sharp peak at 241.0 nm (Method B). Method C applied was area under curve (AUC) in the wavelength range of 308.5-298.5 nm. Linearity for detector response was observed in the concentration range of 10-50 $\mu\text{g/ml}$ for all three methods. The proposed methods were successfully applied for the determination of Mesalazine in commercial tablet preparation. The results of the analysis were validated statistically and by recovery studies and were found to be satisfactory.

KEY WORDS Mesalazine; Absorbance maxima; Derivative spectroscopy; Area under curve.

- **Phyto-Physico chemical evaluation, Antioxidant activities and Diuretic activity of Leaves of Lagerstroemia reginae**
S Kalidas, B Kameswari, P Devi, B Madhumitha, R Meera and NJ Merlin.....83

ABSTRACT

The present study deals with the preliminary phyto- physicochemical evaluation of a well known folklore remedy for diabetic and inflammation. i.e *Lagerstroemia reginae*. The standardization is carried out on the basis of physiochemical and phytochemical studies including parameters such as fluorescence characteristics and analysis of inorganic constituents. The study contributes to the development of standardization parameters of herbal drugs used in Indian system of medicine. Thin layer chromatography has been carried out for the entire phytochemical constituent and the inference is noted. It was found that Aminoacids, Tannins, Phytosterols, Flavanoids, Saponins, Triterpenoids and Cardiacglycosides present in the extracts. The diuretic activity was tested in rats at 500 and 1000 mg/Kg, orally and compared with furosemide (20mg/Kg, intraperitoneally) as the standard in aqueous extract. The extract was found to possess significant dose dependent diuretic activity. The antioxidant activity was determined by two in-vitro methods – DPPH and H_2O_2 radical scavenging.

KEY WORDS *Lagerstroemia reginae*, Phyto-Physiochemical evaluation, Antioxidant activity, Diuretic activity

- **Reverse Phase High Performance Liquid Chromatographic Method for the Determination of Ethamsylate in Bulk and Tablet Dosage Forms**

ABSTRACT

A simple, sensitive, precise and specific reverse phase high performance liquid chromatographic method was developed and validated for the determination of Ethamsylate in bulk and its tablet dosage forms. It was found that the excipient in the tablet dosage forms does not interfere in the quantification of active drug by proposed method. The HPLC separation was carried out by reverse phase chromatography on C₁₈ column (4.6 x 250 mm, 5µm particle size) with a mobile phase composed of methanol: acetonitrile: acetate buffer P^H 2.8 (60:30:10 v/v) in isocratic mode at a flow rate of 1 ml / min. The detection was monitored at 290 nm. The calibration curve for Ethamsylate was linear from 0.5 – 100 µg/ml. The interday and intraday precision (relative standard deviation) was found to be within the limits. The proposed method has adequate sensitivity, reproducibility and specificity for the determination of Ethamsylate in bulk and its tablet dosage forms.

KEY WORDS Ethamsylate, HPLC, estimation

SHORT COMMUNICATION

- **Method Development and Validation of Erythrosine (E127) Using RP-HPLC Coupled With PDA Detector**
J Bagyalakshmi, S Vijayaraj , Sindhu and TK Rav95

ABSTRACT

A simple, precise and accurate RP-HPLC method coupled with PDA detector has been developed for the estimation of erythrosine (E127) in food stuffs and tablet dosage forms determination was preformed on phenomenex C₁₈ Gemini column (150X4.6mm), 5µ particle size. The mobile phase, 20mM ammonium acetate buffer: Acetenitrile: Methonol in the ratio of 40:30:30 v/v/v was selected. 529nm was selected as the detection wavelength. Calibration graph was plotted showing dependence of response (peak area) on the amount chromatograph. The method has a linear range of 0.2–1 µg/ml. The slope, intercept and correlation coefficient was found to be 0.0044, 0.00757 and 0.99957 respectively.

KEY WORDS RP- HPLC, Erythrosine, PDA detector, validation

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Asian Journal of Research in Chemistry, E-282 'Saikripa' Sector-4, Pt. Deendayal Upadhyay Nagar,

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