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   Boovizhikanann Thangabalan, JNTUH, India
Nutraceuticals and bio-activity assays in health grains

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Generally grains are consumed in refined form and many of the present day chronic disease are due to this. Grain diversity like different coloured rice and millets like finger, foxtail and proso are traditionally used in whole form, which includes endosperm, bran and germ, for health and wellness. Objective was to assess the nutraceuticals and bioactive potential of whole forms of few millets and rice varieties by optimizing the analytical methods. Characterization of Vitamin E, oryzanol as well as carotenoid components by HPLC and spectral studies; Soluble and bound polyphenols, flavanoids, and anthocyanin by colourimetric method; bioactivity assays like vitamin E activity by calculation, free radical scavenging activity by DPPH+ and total antioxidant activity by phosphomolybdenum reagent method were carried out. Results showed the presence of delta, gamma and alpha tocotreinols which are cardio and neuro protective, and tocopherols which are antioxidant, with higher amounts in pigmented rice. Whereas gamma-tocopherol content was the highest in millets. Oryzanol characterization showed the presence of cycloartenol ferulate and 24-methylene cycloartenol feulate, which are having anti-oxidant and anti-inflammatory properties, in whole rice varieties. Carotenoid content was higher in millets and it was mainly lutein. Content of soluble and bound polyphenols was also higher in pigmented rice and millet samples, with presence of anthocyanin in black rice. Bioactivity assays showed that vitamin E activity, free radical scavenging activity and total antioxidant activity were higher in pigmented rice and millet samples. It may be concluded that differences are there in the content of nutraceuticals and bioactivity in whole forms of rice and millet varieties and innovative analytical methods have to be employed to screen the bio-potent grain forms.

Biography

Jayadeep A, Principal Scientist, CSIR-CFTRI, is Ph.D. Biochemistry from University of Kerala in 1993. He has worked from 1992 to 1999 in the International programs of Johns Hopkins University, USA & Regional Cancer Centre in the Dept: of Biochemistry, University of Kerala, India in various capacities as Postdoctoral Fellow, Project Scientist & Research Scientist, and joined CFTRI as Scientist in 1999. He was awarded UGC Research Fellowship(1986-91); Johns Hopkins University, USA, Overseas Postdoctoral Fellowship (1992-94), International Union of Biochemistry & Molecular Biology Indian Scientist Award (1994); International Nutrition Foundation & Kraft Foods, USA, Visiting Scientist Fellowship(2006). He has 30 publications, 4 patents, 5 processes, and handled 21 projects.

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Development of different strategies for the clean-up of polychlorinated biphenyls (PCBs) congeners using pressurized liquid extraction

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The extracted fish samples (w/w) using pressurized liquid extraction (PLE) were cleaned up by applying different adsorbent materials such as: combination of acidic/basal silica and alumina, florisil, and silica gel either alone or in combination with another sort of sorbent. Different solvents such as hexane (H), dichloromethane (DCM), with different compositions were used to elute the PCBs target compounds from the spiked fish samples.

Overall the mean percentage recoveries for all PCBs congeners using PLE were ranging from 78.6% to 98.7%; from 79.4% to 91.8%; from 65.8% to 104.5% and from 82.4% to 100.9% for cases A, B, C, D and E, respectively. However, the overall mean percentage recoveries for the 13C-PCBs surrogate including: 101, 138, 153, 180 and 209 were ranging from 88.2% to 97.6%; from 79.4% to 90.2%, from 88.3% to 96.4%, from 79.8% to 90.4% and from 83.9% to 95.9%, for cases A, B, C, D and E, respectively. The limits of detection of the proposed method were varied from 0.01 to 0.28 ng/g (w/w) for different PCBs congeners. The proposed method has linear dynamic range from 21.5ng/g to 109 ng/g. This method was applied to fish samples for the determination of the target PCBs components.

Biography
Amel Al-Rashdan has completed her PhD at the age of 31 years from University of Cincinnati, Ohio, USA. She is working in Kuwait Institute for scientific Research, she was a Department Manager for Central Analytical Laboratories for 5 years and now she is top management representative for ISO 9001:2008 and ISO 17025:2005. She has publications in reputed journals in the field of analytical chemistry in the hyphenated techniques such as HPLC-ICP-OES, HPLC-ICP-MS and GC-MS. She is also representing her country Kuwait and the institute as a member in Rotterdam Chemical Review Committee for Rotterdam Convention.
Critical bioanalytical study of the FRAP assay for assessing total antioxidant capacity of biological samples

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Free oxygen radicals are highly reactive molecules and have been recognized as a major cause of oxidative stress. Molecular oxidative damage, caused by reactive oxygen or nitrogen species (ROS/RNS), have been implicated in the pathophysiology of many diseases including diabetes mellitus, cancer, rheumatoid arthritis as well as cardiovascular, renal, inflammatory, infectious, and neurologic diseases. Biological fluids within the human body have an array of protective antioxidant mechanisms; both for preventing the production of free radicals and for repairing oxidative damage and several assays have been adopted to measure a total antioxidant capacity of biological fluids. However, the measured antioxidant capacity of a sample depends on the method and free radical generator or oxidant used in the measurement. The ferric reducing ability of plasma (FRAP) assay uses an easily reduced oxidant in a redox-linked colorimetric method and is the only assay that measures on the basis of direct electron transfer. A detailed literature survey revealed the use of an excessive stoichiometric concentration of ferric ions in the formation of the FRAP reagent, resulting in extraneous ferric ion in the solution which potentially can cause variability in values of antioxidant capacity of reference standards as well as samples.

The purpose of this study is to critically evaluate bioanalytical aspects of the FRAP assay and establish the accurate stoichiometry for the non-specific half reaction. In this study, the effect of different concentrations of ferric ions on antioxidant capacity has been analyzed. Stoichiometry and kinetics of FRAP reagent formation was evaluated using cyclic voltammetry and the coupling of a post column reaction with HPLC. An overview of significant results will be presented to provide a better understanding of the FRAP assay and will give an insight into problems and issues encountered during the analysis of biological samples.

Biography

Rashida has completed, Master of Science in Biotechnology from Swinburne University of Technology, Victoria, Australia. Currently, she is pursuing PhD in Swinburne University of Technology, in bioanalytical screening and characterization of cardioprotective bioactive compounds from microbial sources, under the supervision of Dr Peter Mahon and Associate Professor Enzo Palombo.

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Bioanalytical determination of vancomycin and ceftriaxone concentration in serum and tissue fluid by HPLC in patients and its application to musculoskeletal infections

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Infection is a significant clinical problem in orthopaedic surgeries and chronic infection can persist intermittently for years. Surgical debridement is the treatment of choice but systemic antibiotics are ineffective in achieving significant concentrations at the site of infection because of local avascularity. Local antibiotic delivery from polymethyl methacrylate (PMMA) cement beads is the current gold standard method of local drug delivery system against which other local drug delivery modalities are compared.

Hence a prospective study was conducted to estimate the concentration of antibiotic in the serum and seroma fluid leached from the antibiotics (Vancomycin and Ceftriaxone) impregnated PMMA beads and the amount of antibiotics absorbed into the systemic circulation estimated by its serum concentration by high performance liquid chromatography (HPLC).

The HPLC method used with C18 (250 × 4.6mm, 5μm) column and analytical guard column 12.5x4.6 mm (5μm), with a gradient elution (1 mL/min) at 40°C column temperature. A mobile phase consisting of a binary mixture of methanol and phosphate buffer adjusted to pH 4 with orthophosphoric acid in a ratio of 30:70. The eluent was monitored at 280 nm. The calibration curve was linear within the range of 2-50 μg/mL (r²=0.99, n=6) for both the drugs. The lowest limit of quantification (LLOQ) was 100 ng/mL for vancomycin and 120 ng/mL for ceftriaxone. The retention times of Vancomycin and Ceftriaxone were 2.3 and 3.1 min respectively. Greater than 85% recoveries were obtained for Vancomycin and Ceftriaxone.

The intra and interday relative standard deviation (%RSD) were <5%.

Venous blood will be drawn by venepuncture of upper limb veins and and local seroma fluid from the site of LADS implantation will be aspirated from the previously inserted Ryle's tube at the intervals of 24 hours, 48 hours, 72 hours, 5th day, 7th day and 10th day and marked separately. The collected serum and seroma fluid were labeled "S" and "L" for identification of venous blood and local seroma fluid. Venous blood will be centrifuged at 3500 rpm (rotations per minute) for 5 minutes (Remi centrifuguer, India). Both the serum and seroma fluids will be stored at -20 degree centigrade from the time of collection.

Biography

B.M. Gurupadayya has completed his PhD at the age of 34 years from Kuvempu University, Shimoga and post graduation (M.Pharm) from SCS College of Pharmacy, Harapanahalli, Gulbarga University. He is the professor of Pharmaceutical Analysis at JSS College of Pharmacy, Mysore, Karnataka. He has published more than 40 papers in reputed journals.

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Influence of gamma irradiation on morphogenetic response in shoot tip cultures of
*Cucumis melo* l. cv. bathasa

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The application of physical mutagens in tissue culture has been reported by several authors (Botino, 1975 and Skirvin 1978). There have been numerous investigations on the effect of ionizing radiation on callus tissue. The effect of ionizing radiation on callus tissue has been reported in different plant material (Rao and Narayanaswamy, 1975 and Werry and Stoffelsen, 1981). The evidence of low dose radiation treatment in callus cultures have been reported (Degani and Pickholz 1973; and Sharma *et al.*, 1983). Effect of gamma radiation on growth and differentiation of another callus in *Datura* was reported (Jain *et al.*, 1984). Stimulatory effects of low doses of ionizing radiations, not only on growth but also on differentiation in cultured plant cells was demonstrated by several workers (Sharma *et al.*, 1983). Kochbha and Spiegel-Roy (1978) demonstrated that by irradiation and addition of certain growth regulators like IAA to the medium the response of *Citrus sinensis* tissue culture was enhanced.

Biography
T. Thirunahari. Ugandhar has completed his Ph.D at the age of 28 years from Kakatiya University under the guideness of Prof N.Ramaswamy Head Department of Biotechnology Kakatiya University Warangal immediately he was started his committed teaching career as a Assistant Professor in Botany at C.V. Raman P.G. College Mancherial in 2005 and he was appointed as Assistant Professor in Botany on 2012 Feb 4th by APPSC at S.R.R Govt Degree and P.G. College Karimnagar. He has published 30 research articles, co-authored 3 books and guided 10 M.Phil theses. He has attended 20 national seminars and 4 international seminars and also attends 4 symposia and workshops. His major fields of teaching and research include Cytology and Cytogenetics, Genetics and Plant Breeding, Molecular Genetics, Mutation Breeding, Plant Tissue Culture and Biotechnology. He successfully applied mutation breeding to brinjals, chillies and tomatoes and developed several agronomically useful varieties. He established clonal multiplication of certain forest trees. He has a patent pending for *In Vitro* Propagation of Tassar Silk Plant.

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Micelles activated planar chromatographic separation of hydrophilic vitamins

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The separation efficiency of micellar solutions in thin layer chromatography of hydrophilic vitamins (B₁, B₉, B₁₂ and vitamin C) has been examined using silica gel as stationary phase. The best results were obtained with mixed micelles (aqueous solution of anionic SDS (0.5%) plus non-ionic Triton X-100 (0.5%) surfactants) and butanol (9:1 v/v) as mobile phase. The proposed method is applicable to the identification and separation of vitamins (B₁, B₉ and vitamin C) present in drug samples (Becasule and Celin). The separation 1 µg of vitamin C from milligram quantities (up to 0.50 mg) of vitamins B₁ has been successfully realized. Effect of metal ions as impurities, limit of detection and semi quantitative analysis on the separation of vitamins have been examined.

Biography

Sudhanshu Sharma has completed his Ph.D. in Applied Chemistry on “Surfactant Mediated Chromatographic Analysis of Pharmaceuticals” from Aligarh Muslim University, Aligarh, India at the age of 27. He has published more than 12 Research papers in reputed journals and serving as an editorial board member of various repute Journals during last 03 Years. He is involved in various research projects based on application of nano-materials, surfactants and right now working on application of silver nano particles in cancer prevention. Currently he is working as an Assistant Professor at Department of Applied Chemistry, O. P. Jindal University Raigarh, India.

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Synthesis and characterization of transition metal complexes of 2-aminonicotinaldehyde and their biological study

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Nicotinamidases are metabolic enzymes that hydrolyse nicotinamide to nicotinic acid. These enzymes are widely distributed across biology; with examples found encoded in the genome of Mycobacteria, Archaea, Eubacteria, Protozoa, Yeast and invertebrates, but there are none found in mammals. The catalytic mechanism is still not understood. Nicotinamidases are required for the growth and virulence of several pathogenic microbes. These enzymes regulate life span in their respective organisms, consistent with proposed role in the regulation of NAD⁺ metabolism and organismal aging. The study state kinetic parameters of nicotinamidase enzymes from C.elegans, Sa.cerevisiae, Streptococcus pneumoniae(a pathogen responsible for human pneumonia), Borreliaburgdorferi (the pathogen that causes Lyme disease), and Plasmodium falciiparum (responsible for most human malaria) are recently reported. Nicotinamidases are generally efficient catalysts. Nicotinaldehyde was determined to be a potent competitive inhibitor of these enzymes, binding in the low micromolar to low nanomolar range for all nicotinamidases. Inhibitions are consistent with reaction of the universally conserved catalytic Cys on each enzyme with the aldehyde functional group to form a thiohemiacetal complex and ammonia. A catalytic mechanism that explains nicotinamidase and nicotinic acid 18O exchange chemistry for the S.pneumoniae enzyme involving key cataltic residues, a catalytic transition metal ion, and the intermediacy of a thioesterintermediate. In view of this, the synthesis and characterisation of 2-aminonicotinaldehyde transition metal complexes have been taken up with their biological activity. All the complexes are characterised by different spectroscopic study. 2-aminonicotinaldehyde and its Zn(II) complexes were characterised with single crystal X-Ray diffraction studies.

Biography

M.Rama Chary has 32 years of teaching experience for UG and PG; specialized in Inorganic chemistry. He has completed his Ph.D at the age of 35 years from Kakatiya University. He is serving as Assistant Professor at Lal Bahadur College (Re-Accredited with ‘A’ Grade by NAAC). He has published 8 papers in reputed journals and reviewed several books for undergraduates. His area of specialization for research is Synthesis, Characterization and Biological activity of metal complexes. He has completed 3 minor research projects sponsored by UGC, and a proposal for a major research project on NANO MATERIALS has been submitted recently to UGC.

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The use of genetic algorithms in response surface methodology to produce flavour ester by ethanol and butyric acid

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Flavour is usually the result of the presence, within complex matrices, of many volatile and nonvolatile components with diverse chemical and physicochemical properties. A vast array of compounds may be responsible for the aroma of food products, such as alcohols, aldehydes, esters, dicarbonyls, short to medium chain-free fatty acids, methyl ketones, lactones, phenolic compounds and sulphur compounds. The use of enzymes to improve the traditional chemical processes of food manufacture has been developed in the past few years for the production of nonvolatile components. Lipases are the most versatile biocatalysts and bring about a range of bioconversion reactions such as hydrolysis, interesterification, esterification, alcoholysis and aminolysis (V.C. Aragão et al., 2011). Since lipases are widely used in food industries, it is necessary to study their performance during the esterification reaction. Accurate control of lipase concentration, alcohol and/or acid concentration, temperature and reaction time is required to maximize the production of flavour ester.

In the study, the esterification percentage of the enzymatic synthesis of ethyl butyrate production has been evaluated by using factorial design and response surface methodology. In order to establish the optimal conditions of esterification, temperature, ethanol/butyric acid molar ratio, enzyme concentration and butyric acid concentration were evaluated in a fractional factorial design (2^4−1) followed by a 24 central composite rotatable design (CCRD), response surface methodology (V.C. ARAGÃO et al.; 2011) and compared with genetic algorithms which is a stochastic evolutionary optimization technique. These type of evolutionary algorithms have gained popularity in solving optimization problems. Genetic algorithm which is more effective regardless of the nature of the objective functions and constraints and have been well known to provide global optimal solutions. Three basic operations used in GA: Reproduction, Crossover and Mutation. The results indicate the genetic algorithm is able to generate the optimal conditions for maximum esterification percentage within reasonable number of cycles. The performance of the model is evaluated by comparing GA predictions with the RSM model.

Biography

J. S. Eswari has obtained her M.Tech Biotechnology from IIT, Kharagpur. Currently working as Woman-Scientist at IICT, Hyderabad and pursuing Ph.D from IIT, Hyderabad. Published few papers in reputed journals and worked in sponsored projects.

P Swapna Reddy has obtained her M.Tech Chemical Plant Design from NIT Karnataka. Currently working as Senior Research Fellow at IICT, Hyderabad and pursuing Ph.D from IIT, Bombay. Published few papers in reputed journals and international conferences.

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Structural determination of some organic compounds by 1D, 2D and MD-NMR spectroscopy

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For, the last fifty year’s nuclear magnetic resonance spectroscopy, generally referred as nmr, is one of the most versatile technique for elucidation of structure of organic compounds. Among all available spectrometric methods, NMR is the only technique which offers a complete analysis and interpretation of the entire spectrum. Due to improved experimental technology and novel approaches, over the last decade Nuclear magnetic resonance (NMR) has shown a tremendous progress. Generally, NMR spectroscopy makes use of three approaches; those are one dimension (1D), two dimensions (2D) and multiple dimensions (MD). Usually, the first approach of 1D-NMR ($^1$H, $^{13}$C, $^{15}$N, $^{19}$F, $^{31}$P, DEPT, INEPT etc.) generates good information about the structure of simple organic compounds, but in case of larger molecules the 1D-NMR spectra are generally overcrowded. Hence, the second approach of 2D-NMR (COSY, DQFCOSY, MQFOSY, HETCOR, HSQC, HMQC, HMBC, INADEQUATE, TOCSY, NOESY, HOESY, DOSY, ROESY, EXSY etc.) is used for the further larger molecules, but 2D-NMR spectra also becomes complex and overlapping when used for further very large molecules like proteins. Hence, so as to achieve high resolution and reduced overlapping in spectra of very large molecules, 3D-NMR or MD-NMR (Homonuclear and Heteronuclear) are generally used.

Biography

Neeraj Kumar Fuloria has completed his PhD in Pharmaceutical Chemistry at the age of 35 years from Uttar Pradesh Technical University, India. He is the Head of Department of M. Pharm. (Quality Assurance), in Anuradha College of Pharmacy, Amravati University, M.H., India. He has published more than 18 papers in reputed journals and serving as an editorial board member of Journals like The Clinical Research Plus Magazine and Bulletin of Pharmaceutical Research of repute.

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Method development, validation and simultaneous estimation of metformine, pioglitazone and glibenclamide by RP-HPLC using gliclazide as an internal standard in tablet dosage form

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A simple, sensitive and specific liquid chromatographic method with UV detection (230 nm) was developed for the simultaneous estimation of Metformine, Pioglitazone and Glibenclamide in tablet dosage form and Gliclazide as an internal standard. Separation was achieved with an phenomenex luna 5µ CN 100R, 250X4.60 mm 5 micron size column, ambient tempature with a low pressure gradient mode with mobile phase containing acetonitril, water and 0.5% of potassium dihydrogen phosphate buffer pH 2.5 adjusted with orthophosphoric acid (60:20:20). The flow rate was 1 mL min⁻¹ and eluent was monitored at 230 nm. The selected chromatographic conditions were found to effectively separate Metformine, Pioglitazone and glibenclamide with retention time of 2.2, 2.8 and 5.8 min respectively. The linearity range of Metformine, Pioglitazone and Glibenclamide is found in the range of 50-300 µgml⁻¹, 1.5-9.0 µgml⁻¹ and 0.5-3.0 µgml⁻¹ respectively. The proposed method was found to be accurate, precise, reproducible and specific and it can also be used for routine quality control analysis of these drugs in combination tablets.

Biography

Anand Kumar is purusing his PhD in JSS University, JSS College of Pharmacy Mysore, under the guidance of Dr. B. M. Gurupadayya, Professor Department of Pharmaceutical Chemistry, JSS College of Pharmacy, Mysore. He has published more than 40 papers in reputed journals.

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Purification of quorum-sensing peptide pheromones secreted by the human pathogen *Streptococcus pyogenes* using fractionation and mass-spectrometry

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**Introduction:** *Streptococcus pyogenes* (Group A Streptococcus, GAS) is the causative agent of many human diseases, including pharyngitis, rheumatic fever and necrotizing fasciitis. Recent studies indicate Streptococci produce and respond to several secreted signaling peptides that are imported into the cell and subsequently bind to regulator proteins of the Rgg family. In GAS, four Rgg paralogs exist, each serving as transcriptional regulators of genes associated with pathogenesis (RopB), biofilm induction (Rgg2 and Rgg3), or a cryptic competence regulon (ComR). The genes encoding peptide pheromones for modulating the activity of Rgg2, Rgg3 and ComR are known, while the one leading to RopB activation remains unknown. The aim of this study is to identify and elucidate the precursor and active peptide pheromones from culture supernatants that control each Rgg pathway.

**Methods:** Spent culture media was fractionated using low-molecular weight filters and reverse phase chromatography steps to isolate peptide pheromones. The activity of HPLC fractions was tested by luciferase reporters that were generated by fusing the *luxAB* genes to promoters controlled by each Rgg protein. Mass spectrometry was used to identify active molecules.

**Results and Conclusions:** We demonstrate that GAS spent culture supernatants contain at least four specific factors that can induce independent transcriptional reporters. Mass-spectrometry analysis is underway to elucidate each active pheromone. Revelation of the mature peptide pheromones will be a first step in designing antagonistic peptides used for future therapeutics designed to interfere with intercellular signaling in GAS and in other Rgg-containing microbes.

**Biography**

Chaitanya Aggarwal did his B.Tech in Biotechnology from Kurukshetra University, Kurukshetra in 2008. He then worked in Biologics Development Unit of Dr. Reddy’s labs at Hyderabad for one year. He moved to USA in 2009 to pursue PhD at University of Illinois, Chicago in Center for Pharmaceutical Biotechnology. His PhD research, under the guidance of Dr. Michael Federle, focuses on understanding bacterial cell-to-cell communication, termed as quorum-sensing, in human pathogen *Streptococcus pyogenes*.

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Application of bioanalytical method for drug herb interaction study

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Bioanalytical methods are generally useful for estimation of pharmaceuticals from biological fluids like blood, plasma, serum, urine and tissues. Now a days there is increased tendency of consumption of ayurvedic formulations along with allopathic drugs by the patient, so chances of herb drug interactions cannot be overlooked. Well developed and validated Bioanalytical methods are important in study pharmacokinetics of pharmaceuticals. Literature reviewed suggests alteration in pharmacokinetics of allopathic drugs by herbal extracts/ formulations. If such interaction occurs, as reported with few drugs, careful adjustment of dosage is necessary. Moreover patients should be made aware of such of interactions. Proposed work describes drug herb interaction one of the most widely used antidiabetic drug and ayurvedic formulation.

Biography
Vandana T. Gawande is currently working as an Asst. Professor, Quality Assurance Techniques in STES’s Sinhgad Institute of Pharmacy, Narhe, Pune. She was 2nd rank holder in University of Pune for her M.Pharm Degree in Quality Assurance Techniques. She was awarded Sir Ratan Tata Scholarship for all 4 years in B.Pharmacy on the basis of merit. She is currently enrolled for PhD in Pharmaceutical Chemistry in University of Pune. She has published 11 research papers in well known national and International journals.

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Simultaneous estimation of loteprednol etabonate and tobramycin in their combined dosage form by RP-HPLC method

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A simple, rapid, precise, and accurate, reversed phase high performance liquid chromatographic method was developed and validated for simultaneous determination of loteprednol etabonate and tobramycin. The chromatographic separation was achieved on Grace 4.6 (id) x 250 mm column at detector wavelength of 230 nm, using an isocratic mobile phase consisting of acetonitrile and water in a ratio of 60/40 at a flow rate 0.8/ml. The retention time for loteprednol etabonate and tobramycin were found to be 4.4 and 8.0 respectively. The method showed adequate precision with a relative standard deviation (RSD) smaller than 3%. The accuracy was analyzed by adding a standard drug and good recovery values were obtained for all drug concentration used. The HPLC method developed in this study showed specificity and selectivity with linearity in the working range and good precision and accuracy, making it very suitable for quantification of loteprednol etabonate and tobramycin in ophthalmic solution. The analytical procedure is reliable and offer s not only advantages in terms of speed but also low cost of reagents.

Key words: loteprednol etabonate, tobramycin, acetonitrile, methanol etc.

Biography

L.R. Gandhi has completed his M.Pharm at the age of 24 year from S.G.B.Amravati University. He is doing his PhD from NIMS University Jaipur. He has got Consolation prize in State level Model Making Competition in Innovative pharmaceutical packing held at Sawarde, Ratnagiri for saline bottle and eye drop. He has published 5 papers in repute journal. He has attended more than 7 conferences and workshop.

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Simultaneous RP-HPLC determination of amitriptyline, carbamazepine and flunarizine in human and rat plasma

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Anticonvulsant drugs have been used in migraine prophylaxis since 1970. In recent years, new antiepileptic compounds have given rise to much interest in pain control. Anticonvulsant drugs used in prophylaxis of migraine are carbamazepine, amitriptyline, flunarizine, levetiracetam, lamotrigine, phenytoin, phenobarbitone etc. Since all migraine prophylaxis drugs can have many side effects, of which weight gain and tiredness/dizziness are the most common ones, this problem should be taken into account when choosing the drug together with the patient. Physicians use combination of different drugs and the combination of different drugs for migraine prophylaxis has not been evaluated to date at all.

Amitriptyline, carbamazepine and flunarizine are widely prescribed for prophylactic treatment of migraine and interactions amongst them is probable when they are co-administered. There are no analytical methods for simultaneous determination of selected drugs to evaluate their potential drug interactions. In the present work, we have developed and validated simple and economic RP-HPLC method for simultaneous determination of amitriptyline, carbamazepine and flunarizine in human and rat plasma.

Rat and human plasma were frozen at -20°C and thawed to room temperature. The analytes were separately spiked in to rat and human plasma for method development and validation. On stability studies, the analytes were found to be stable for 48 hrs in both rat and human plasma.

The analytes were isocratically eluted through phenomenex C8 Column and methanol & acetonitrile (50:50) were used as mobile phase. Linearity range was from 5 to 35 µg/ml for all the 3 drugs. Lowest limit of quantification was 70 ng, 100 ng and 50 ng respectively for amitriptyline, carbamazepine and flunarizine with retention times 3.0, 3.7 and 4.3 mins. Recoveries in rat and human plasma were greater than 90 %. The developed methods were found to be precise (% RSD < 2 %), robust and accurate. The validation results of selected drugs in rat plasma were comparable with that of human plasma.

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Production, characterization and applications of microbial cellulose: An important biomedical polymer

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Cellulose is the most abundant biopolymer on earth whose demand has been met using cellulose from plants (wood and cotton). However, some limitations like decreased land holdings for agriculture, difficulty in removal of hemicellulose or lignin inherently associated with it have driven the direction of research in finding its suitable alternative. In this respect, microbial cellulose forms the most lucrative alternative to plant cellulose. Also, microbial cellulose has many unique and better properties than plant cellulose which makes it an important biopolymer of considerable industrial importance. In the present work, we have developed an economic process for the production of microbial cellulose in high titres. Here, a novel and potent bacterial species for microbial cellulose production was isolated which after process optimization yielded 17.0 g/L microbial cellulose. Further, the production was also successfully scaled up in trays and bioreactor. We have also developed methods for its purification and drying. The microbial cellulose produced was characterized for its different properties like morphological and structural analysis was carried out by Scanning electron and Transmission electron microscopy, NMR, FT-IR spectroscopy and X-ray diffraction. Different physical properties of microbial cellulose like its tensile strength, Young's modulus, water absorbing capacity, thermogravimetric analysis, biodegradability, biocompatibility and others were also analyzed. The properties obtained showed that it is pure microcrystalline nanocellulose. We have also developed method for preparation of microbial cellulose powder, coloured microbial cellulose and different shaped cellulose objects (gloves and vessels) which have medical importance. Further, we have used the microbial cellulose sheet for printing, as a filter paper and as antimicrobial disc. Thus, the present study provides an efficient and economic process for the production of microbial cellulose which in the future would replace plant derived cellulose for fulfilling each and every basic requirements of cellulose.

Biography

Firdaus Jahan is a Ph.D scholar (last year of Ph.D) in Department of Microbiology, University of Delhi South Campus, New Delhi. Currently working on the production, characterization and applications of microbial cellulose which is an important biomedical polymer; Has 4 research papers published in international journals. Hasan Indian and PCT patent titled “A novel isolated bacterial strain of Gluconacetobacter and an optimized economic process for microbial cellulose production therefrom” on work on microbial cellulose; Received few awards for research work on microbial cellulose, viz. Second prize (cash prize Rs. 75,000) on the project titled “An optimized economic process for microbial cellulose production from a novel species of Gluconacetobacter’ in India Innovation Initiative – II National Fair 2011 organized by DST, Agilent Technologies and CII in November 2011 at New Delhi. Best poster award in an international conference on “New Horizons in Biotechnology” in November 2011, on the topic, “Production of microbial cellulose by a bacterium isolated from fruit”. Second prize in poster presentation on the topic “Microbial Cellulose: An Alternative to Plant Cellulose” in an Indo-Italian Seminar on “Green Chemistry” at Department of Chemistry, University of Delhi, Delhi in December 2009.
FTIR based quantitative estimation of biocatalytic oxidation of 1-phenylethanol

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Oxidation of 1-phenylethanol to acetophenone was carried out by Candida parapsilosis ATCC 7330, versatile biocatalysts shown by us1. The reaction was quantitated using FTIR spectroscopy. FTIR spectroscopy is used in quantification of pharmaceutical active ingredients2, studying the enzyme activity and kinetics of enzymes such as glucose oxidase3, urease4 among others, and it also complements NMR data in identification of a compound. In the present study, quantitative analysis of acetophenone produced by the biocatalytic oxidation of 1-phenylethanol was carried out by measuring the band area corresponding to the stretch of carbonyl group at 1682.59cm⁻¹ (band maximum). Quantification of acetophenone using FTIR was validated by GC. FTIR has the advantages of reduced time of analysis, amount of solvent used and sample preparation. Details of the developed method will be presented.

![Reaction Scheme](attachment:reaction_scheme.png)

Biography

Sneha Sudhakara received the B.E. degree from Visveswaraiah Technological University, Karnataka, India, in 2009. She is pursuing MS by Research in the Department of Biotechnology, Indian Institute of Technology (IIT), Madras from July 2011.

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RP-HPLC method development and validation of zaltoprofen in pure form and in solid dosage form

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A simple, rapid, sensitive and precise RP-HPLC method has been developed for the estimation of zaltoprofen in tablet dosage form. In this method Phenomenax Luna C18, 250 x 4.6 mm, 5mm column with mobile phase consisting of acetonitrile and 0.02 M phosphate buffer in the ratio of 50:50 v/v in isocratic mode was used. The detection wavelength is 232 nm and the flow rate is 1.2 mL/min. The method is linear in the concentration range of 20-120 μg/mL. The linearity of zaltoprofen shows a correlation coefficient of 0.999. The percentage recovery ranges from 99.82-100.46 %. The proposed method was validated by determining linearity, accuracy, precision, specificity, LOD and LOQ.

Biography

B. Thangabalan has completed M.Pharmacy in The Tamilnadu Dr.MGR Medical University, Chennai and pursuing Ph.D., in JNTUniversity, Hyderabad. Presently he is working as Associate Professor in SIMS College of Pharmacy in Guntur, AP. He has presented papers in many international conferences and published more than 25 research papers in reputed journals. He is doing research work on analytical method development and validation of some drugs.

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