ABSTRACT BOOK

NATIONAL CONFERENCE ON RECENT INNOVATIONS IN SCIENCE 2019

18th & 19th Jan 2019

RK.UNIVERSITY

SCHOOL OF SCIENCE
RK.UNIVERSITY

Message from Y S Rajan (Padma Shri Awardee)

RK University, Rajkot has taken up a very vital topic of relevance to Indian economy and society as a whole, in choosing to hold a national conference on the subject of Scientific Research and Commercialization. The benefits derived from such an orientation, are not just limited to academic institutions alone. If one studies the history of scientific, engineering, medical, industrial and even some military applications of developed countries, their academic institutions have played great innovative roles.

In India somehow, the dominant approach has been to place scientific research as an anti-thesis to commercial applications. One can see that the number of patents held by Nobel laureates are on rise world- wide. Also, a number of excellent scientific works has been done by those who work on commercially oriented projects. A wide range of speakers in this conference would show the way for our students who can make a difference for themselves and India with a positive attitude to research and commercialization. India will benefit in the process making it a powerful lead country in the world.

I commend the organizers.

-Y. S. Rajan

सत्यमेव जयते

प्रो. आशुतोष शर्मा
Prof. Ashutosh Sharma

स्वच्छ भारत
एक कदम स्वच्छता की ओर

सचिव
भारत सरकार
विज्ञान और प्रौद्योगिकी मंत्रालय
विज्ञान और प्रौद्योगिकी विभाग
Secretary
Government of India
Ministry of Science and Technology
Department of Science and Technology

11th January, 2018

MESSAGE

I am happy to know that School of Science RK University is conducting two days National Conference on Recent Innovations in Sciences (NCRIS 2019). I appreciate their effort to bring down the diverse field of science on a same platform to visualize its interdisciplinary implementations and bring into play. The conference will provide an excellent interactive opportunity for that.

I have no doubt that scientific presentation and deliberation during this conference will be quite useful to all the participants and will inspire them to strive for excellence in their respective discipline.

I wish to convey my felicitation to organizer and all the participating delegates. I also wish the Institute and its forthcoming conference all success.

(Ashutosh Sharma)

Technology Bhavan, New Mehrauli Road, New Delhi - 110016
Tel: 00 91 11 26511439 / 26510068 • Fax: 00 91 11 26863847 • E-mail: dstsec@nic.in • website: www.dst.gov.in

Message

I am extremely pleased to learn that School of Science, RK University is organizing a two days National Conference on Recent Innovations in Science under the banner NCRIS – 2019 on 18th and 19th January 2019. Gujarat Council on Science and Technology (GUJCOST) Govt. of Gujarat and CSIR Govt. of India has sponsored it. Moreover I am very much delighted on the initiative taken by School of Science to host innovations in science for students to translate into inventions of India like recent path breaking invention of Hydroelectric Cell which is accepted globally.

Multidisciplinary conference encompassing talks from eminent scientists and researchers will enhance the knowledge of the participants. I hope that the conference will provide an excellent platform for all the participants and an opportunity to debate and exchange ideas and experiences in the field of science.

I wish all the success to the conference and congratulate the organizing team and participants.

Dr. R K Kotnala FNASc,FIGU;
Raja Ramanna Fellow,DAE ;
Fellow - National Academy of Sciences,India; Fellow IGU
Outstanding Academician -APAM, Asia Pacific Academy of Materials
Associate Editor, J.Appl Physics (American Institute of Physics) 2014-18 U.S.A.
Associate Editor, IET Science, Measurement & Technology:
(Institutions of Engineering and Technology) , London, U.K.,
Editor, J of Physics Research and Applications; London U.K.
Associate Editor, J. of Physics – Parmana, IAS, Bangalore,

Head (former), Environmental Sciences and Biomedical Metrology Division &
Materials Physics & Engineering Division,Ex-Chief Scientist; NPL.
Distinguished Professor AU.

RKUNIVERSITY

CSIR - National Physical Laboratory, New Delhi - 110 012

प्रो. अनिल डी. सहस्रबुद्धे
अध्यक्ष
Prof. Anil D. Sahasrabudhe
Chairman

सत्यमेव जयते

अखिल भारतीय तकनीकी शिक्षा परिषद्
(भारत सरकार का एक सांविधिक निकाय)
(मा.सं.वि. मंत्रालय, भारत सरकार)
नेल्सन मंडेला मार्ग, वसंत कुंज, नई दिल्ली–110070
दूरभाष: 011–26131498
ई–मेल: chairman@aicte-india.org

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(A STATUTORY BODY OF THE GOVT. OF INDIA)
(Ministry of Human Resource Development, Govt. of India)
Nelson Mandela Marg, Vasant Kunj, New Delhi-110070
Phone: 011-26131498
E-mail: chairman@aicte-india.org

MESSAGE

I am pleased to know that **School of Science, R.K. University**, Rajkot is organising two days **"National Conference on Recent Innovations in Sciences-2019"** under the flagship NCRIS-2019 during 18th-19th January, 2019 which is likely to be attended by various research organizations, universities and colleges throughout Gujarat and other parts of India like Andhra Pradesh, Madhya Pradesh, Karnataka and New Delhi. It is highly appreciable that an event being organised by R K University, Rajkot aiming at the important scientific areas like **"Break Through innovations in Science", "Advanced Spectroscopic Applications" and "Deployment of recent materials"** as the basic Theme of the Conference.

Organising such a mega event would definitely contribute to the national objective of building scientific temper and research culture. I am confident that this Conference would be a harbinger for facilitating an environment in the field of collaborative research for innovations.

I am further delighted to see that R K University has already developed a workshop called **Learning Experience Design** which all the newly inducted faculty members have to take before they begin planning for teaching apart from the vision of the University to focus on pedagogical innovations and learning experience.

I congratulate the organizing committee of R.K. University for organizing such a grand conference.

I convey my good wishes for the two-day conference a grand success.

(Prof Anil D Sahasrabudhe)

Message

We are delighted to welcome you to the CSIR Sponsored 2nd National Conference on Recent Innovations in Sciences, 2019 (NCRIS, 2019) organized by School of Science RK University. It is indeed a very proud moment for us. All faculties, research scholars, students and other delegates from different disciplines of science are welcome to be a part of the forum. As you are aware, development & enrichment program for science education has become increasingly important in the present-day context of the changing scenario in the scientific field.

I am happy to share with you that this time NCRIS- 2019 pertaining to science education has received strong support of one of the prime research institute of India i.e. Council of Scientific and Industrial Research (CSIR) and Gujarat Council on Science and Technology (GUJCOST). This appears to be the perfect time to reflect, review and assess our existing scientific study and make it at par to international standards. Our goal is to create a world-class Indian scientific research community to serve the nation.

Furthermore, with the expansion areas of research different sectors in the state, it becomes imperative that the quality of research is to be passed to all respective researchers and the scientific methodologies ideas of research and learning are percolated to one and all. Additionally, our future vision is to create even greater value to all corners of the Nation. This conference will be one for us to share our thoughts and exchange ideas on how to chart our journey forward to reach new heights.

Towards achieving this goal, the need for a suitable platform was felt where there could be amalgamation of all researchers & educators with the pioneers in the field for improving individual knowledge and skills in the field of science in order to sensitize, explore and exchange innovative concepts in the discharge of their professional duties.

We welcome you all once again to the " National Conference on Recent Innovations in Sciences, 2019 (NCRIS, 2019) ". Come and experience our hospitality and leave with warm memories.

Shri Denish Patel

Executive Vice President

RK University, Rajkot

RKUNIVERSITY

Message

My Dear Colleagues,

Greetings!

I am indeed very happy to note that the 2nd National Conference on Recent Innovations in Sciences, 2019 (NCRIS, 2019) is organized again by School of Science, RK University. Conferences of such nature provide a great opportunity to research fraternity, not only to update knowledge and keep research workers obsessed with latest developmental scenario, in the respective science field, but also act as an occasion for the resource persons/delegates/observers to interact with each other. It is a high time to create research activities among the researchers and faculties in academia. I take this opportunity to extend warm welcome to the resource persons, researchers, faculties and delegates registered for the Conference. My compliments to School of Science for taking such initiative and I hope that this conference would provide valuable, useful and informative ideas to the participant students, researchers and other experts. I heartily wish for the great success of the Conference.

Dr. T R Desai

Vice Chancellor

RK University, Rajkot

RKUNIVERSITY

Message

It gives me immense pleasure to know that School of Science RK University is organizing the 2nd National Conference on the theme of "Recent Innovations in Sciences", on 18-19 January, 2019 (NCRIS, 2019). The evidence-based education system is an imperative part of any science profession. It is extremely relevant and need of the hour for researchers to get together and share their research works among all.

We believe that a National level conference by the School of Science under the arc of the RK University, will help in expanding research horizons and development of new ideas of researchers. I extend my best wishes to the organizers and participants of the conference. I congratulate the Institute for organizing the National Conference and wish the programme a grand success.

Shri N S Ramani

Registrar

RK University, Rajkot

RKUNIVERSITY

Message

Acculturating the young scientists into the networks, ways and traditions of scientific inquiry is one of the prime responsibilities of any university. NCRIS is one such platform created at RK University, where the scientists young and mature, beginners and accomplished come together to examine the research pushing the frontiers their domains. The dissection of ideas, methodologies and findings that happen during the sessions and gets spilled over into informal discussions beyond lead to formation of lifelong research networks which the participants tap into as they chart their research trajectories and careers.

That the School of Science at RK University is at forefront of shouldering such responsibility is heartwarming as well as reassuring. I take this opportunity to congratulate and thank the leadership and the NCRIS team for having invested their resources in causing this convergence of scientific ideas and ideals once again.

Dr. Raashid Saiyed

Dean

Faculty of Doctoral Studies & Research

RK University

RKUNIVERSITY

Message from the Desk of Director School of Science, RK University

Dear Staff and Students,

It is a great honor for the School of Science RK University to organize the National Conference on Recent Innovations in Sciences, 2019 (NCRIS, 2019), to be held on 18th-19th January 2019. The School of Science took a step forward to build up a network with Senior scientists, emerging research scholars, government officials
(Gujarat council of science and technology and council of scientific and industrial research) and reputed publication partners in this regard. The conference's aims are to provide a scientific platform for all the participants to congregate and interact with subject specialists. It also covers a number of plenary talks, oral presentations and poster presentations on newly emerging technologies in different disciplines of Sciences. Areas in various scientific fields play a vital role in finding solutions and providing appropriate technologies to develop and generate new ideas. I am sure the deliberations of this conference will be an enlightening and enriching experience for all the participants. It is noteworthy to mention that there is an overwhelming response to conference. I am very thankful to our management and to all my colleagues for their unstinted help in organizing this conference. All the members of organizing committee have put their best efforts to facilitate good hospitality to all invited guests and delegates. School of Science is in the developing phase of research. In short duration the institute published 300+ research papers in reputed national and international journals. Institutional thrust areas are Advance materials, Cancer prognosis, chemotherapeutic agents Extraction of natural products and environmental challenges. Thus, with such conferences and future programs we are dedicated to expand the horizons and provide the best to our students and all those who connect with us.

Prof. Mayank Pandya
Conference Chair
NCRIS 2018
School of Science
RK University, Rajkot

RKUNIVERSITY

Message from the desk of Conference Convener

Dear Delegates,

As the conference convener, its immense pleasure to organize National Conference on Recent Innovations in Sciences-2019 (NCRIS-2019) during 18th- 19th January 2019. The goal of the conference is to provide national platform for participant to interact and exchange ideas on research and innovations in science. NCRIS2019 is funded by GUJCOST, Govt. of Gujarat and CSIR Govt of India. This conference will provide a wide and diverse platform to students, researchers, teachers and industrial delegates and a prospect to develop effective channel among the science community. This is the 2nd conference under the same flagship "NCRIS". We received overwhelming response from the participants. There were more than 400 participants across the nation in last year conference NCRIS-2018. This year same enthusiasm received from the delegates. So, hope you really enjoy this exciting event at RK University campus and new fruitful collaborations amongst each other. I am thankful to the management of RK University for holding this conference at School of Science, RK University. I also wish thanks to my dear colleagues who have strived hard to make this conference a grand success. I am highly thankful to all the delegates and resource persons for participating in this conference.

Dr. Ashish Tanna

Head, Department of Physics,

School of Science,

RK University, Rajkot

RKUNIVERSITY

2D NMR Spectroscopy: Interpretation of 2D NMR spectra and their applications

Dr. D. I. Brahmbhatt
Ex. Professor of Organic Chemistry
Department of Chemistry, Sardar Patel University,
VallabhVidyanagar-388120, Gujarat
E-mail: drdibrahmbhatt@gmail.com

Abstract

Spectroscopy plays a very important role in chemistry, especially in structure determination of an unknown molecule. In fact, for this, one needs a joint application of spectroscopies like IR, UV, NMR and Mass. Among all these, NMR plays a very important and major role in assigning a structure to an unknown compound.

For a complex molecule, ^{1}H-NMR and^{13}C NMR data are not sufficient to establish its structure and one needs the 2D NMR data for precise structure determination.Variety of 2D NMR spectra are there and they provide distinct informations. Among variety of 2D NMR spectra ,^{1}H-^{1}H COSY ,^{1}H-^{13}C HETCOR,HMBC, HMQC,NOESY,ROESY,INADEQUEATE etc. are of very important in assigning the structure of a compound. They are also helpful in other applications like differentiation of stereoisomers, conformational analysis etc.

RKUNIVERSITY

Dr. Mukesh Ranjan

Scientific Officer - F

FCIPT, Institute for Plasma Research,

Sector-25, Gandhinagar Gujarat, 382044

E-mail ID: ranjanm@ipr.res.in

Abstract

Plasma and plasmonics are two similar branches of physics in which free electrons play strong role. In plasma, electrons are mobile in space but are bounded by the plasma potential, in plasmonics free electrons move on metal surface and bounded by core atoms. In both the cases there is a characteristic electron plasma frequency. These free electrons available on metal surface so called surface plasmon have a unique property that is to feel the electric field generated by light photon. If the size of metal reduces to nanodimension (~ 50 nm), the free electron oscillation nearly matches with the light field oscillations and produce resonance. This phenomenon is known as localized surface plasma resonance (LSPR). In this work, I will present how plasma is useful to tailor the LSPR and results in various applications by giving examples of nanoripples and nanodots structures created by plasma ions. Plasma ion energy and fluence systematical varies the nanoscale wavelength of such nanostructures which are later uses as templates for growing metal nanoparticles. Such arrays produce anisotropic LSPR response and enhanced the light field in an evanescence manner. I will report how the coupled field in between two nanostructures enhance the Raman signal drastically and sense a single molecule or absorb more light on a solar cell surface and improve its efficiency. Plasmonic field coupling in aligned equidistant chains of metal nanoparticles is higher compared to randomly distributed particles. I will report a bottom up approach to grow highly ordered self-assembled silver nanoparticles/nanowires arrays produced on periodically patterned Si (100) substrate. The advantage of this bottom up approach over other self-assembling and lithographic methods is the flexibility to tune array periodicity down to 20 nm with interparticle gaps as low as 5 nm along the ripples. The application of this work in the field of plasmonics solar cell and sensing glucose and cancerous cell will be presented.

Impact Factors: A Controversial Metrics (A Farce from Reality)

RKUNIVERSITY

Dr. Himanshu Agarwal

Executive Editor, Asian Journal of Chemistry

Director, Asian Publishing Corporation, India

E-mail ID: asianpubco@gmail.com

Abstract

It is widely assumed that publication in a high impact journal will enhance the impact of an article (the 'free ride' hypothesis). The impact factor data that are gathered and sold by Thomson Scientific (formerly the Institute of Scientific Information, or ISI) have a strong influence on the scientific community, affecting decisions on where to publish, whom to promote or hire (1), success of grant applications (2), and even salary bonuses (3). Yet, faculties of Developing or under developing countries seem to have little understanding of how impact factors are determined, and, to our knowledge, no one has independently audited the underlying data to validate their reliability. In this talk, I will explain how several factors *viz*. favourism, retraction citations, biased policy, self citations, etc. affects the real integrity work of **Clarivate Analytics** (formerly known as Institute of Scientific Information or ISI).

OP - 1

RKUNIVERSITY

Synthesis and Characterization of Polymer-Supported Heterogeneous Mo(VI) Catalyst and its Application

Siva Prasad Das

Department of Chemistry, School of Science, RK University, Bhavnagar Highway,

Rajkot, 360020, Gujarat, INDIA

Email ID: siva.das@rku.ac.in, siva.spd@gmail.com

Abstract

The polymer-supported metal complexes always draw considerable research attention due to their potential advantages in practical synthesis. However, the synthesis of a robust catalytic system that retained their activity after repeated catalytic cycles is a challenging task. The work presented here is the successful synthesis, characterization and application of a polymer-supported molybdenum(VI) complex. The polymeric-support was pre-functionalized with a Schiff Base and subsequently the complex was formed. The synthetic process was simple and clean. The synthesized compounds were characterized by different physicochemical and spectroscopic techniques. The catalyst oxidized different types of alcohols such as primary, secondary or benzylic alcohols into aldehydes or ketones. Aqueous H_2O_2 was used as an oxidant. The catalyst offered regeneration and recycled for several times.

RKUNIVERSITY

OP - 2

Polymer-Supported Molybdenum(VI) Complex: Synthesis, Characterization and Catalysis

Jeena Jyoti Boruah

Department of Chemistry, School of Science, RK University, Bhavnagar Highway,

Rajkot-360020, Gujarat, INDIA

Email ID: jeena.jyoti@rku.ac.in, jeena.jyoti@gmail.com

Abstract

The polymer-supported metal complexes always gained considerable research interest due to their wide application in diversified fields such as catalysis, pharmaceuticals, electronics, hydrometallurgy, etc. Specially, in catalysis a polymeric-support is likely to impart stability to the attached metal complex species. The present work represents the synthesis of a well defined supported molybdenum(VI) complex and its application in catalysis. The supported complex was synthesized by using a pre-functionalized polymeric resin with amino acids. The functionalized resin was reacted with the molybdenum precursor (H_2MoO_4) to form the final catalyst. After successful synthesis, the catalyst was characterized with the help of elemental analysis, SEM-EDX, FTIR, UV-Vis, NMR spectroscopy and TGA. The catalytic activity was studied towards oxidation of organic sulfides. The compound showed higher TOF and can be recycled atleast upto five reaction cycles.

RKUNIVERSITY

OP - 3

Bioisosterism Approach in Lead Modification for Anticancer Drug Discovery

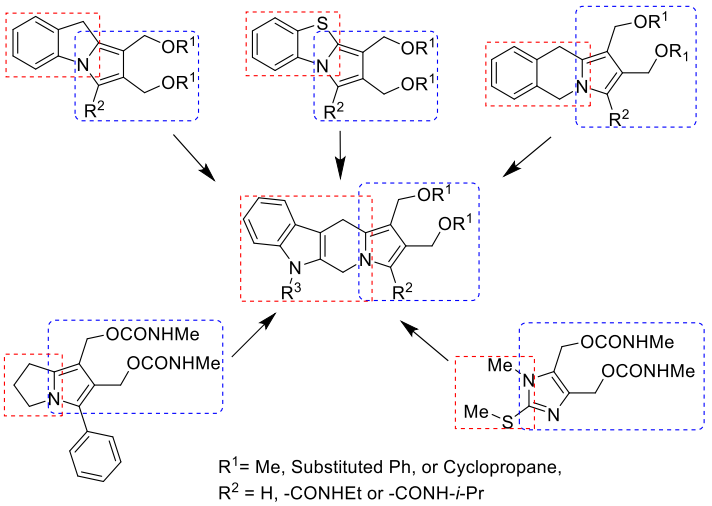
Satishkumar D. Tala

Department of Chemistry, Shree M. & N. Virani Science College, Yogidham Gurukul, Kalawad Road, Rajkot, 360005, Gujarat, India

Email ID: sdtala@vsc.edu.in

Abstract

A new series of bis(hydroxymethyl)indolizino[6,7-*b*]indoles and their bis(alkylcarbamates) were synthesized for anticancer activity using bioisostere approach. These agents were designed as hybrid molecules of β-carboline (topoisomerase inhibition moiety) and bis(hydroxymethyl)pyrrole (DNA cross-linking moiety). The preliminary antitumor studies indicated that these agents exhibited significant cytotoxicity against a variety of human tumor cells in vitro and in vivo. Furthermore, these derivatives possess multiple modes of action, such as induction of DNA cross-linking, inhibition of topoisomerase I and II, and cell-cycle arrest at the S-phase.



RKUNIVERSITY

OP - 4

Review on Method Development in HPLC with Charged Aerosol Detector

Charu P. Pandya and Sadhana J. Rajput

Department of Pharmaceutical Quality Assurance,

The Maharaja Sayajirao University of Baroda, Center of Relevance and Excellence in New Drug Delivery System, Vadodara, Gujarat, 390002, India

Email ID: charuppandya@gmail.com

Abstract

Charged aerosol detection is universal detection in HPLC alternative to other universal detectors like RI, ELSD, chemiluminescent nitrogen detector. Charged aerosol detector can be used for detection of polar, non-polar compounds, non-volatile, semi-volatile compounds in chemical, food, pharmaceutical, consumer products industries and in life sciences research. Charges aerosol detector is more sensitive than other detector, response of Charged aerosol detection does not depend on spectral properties of analyte and is mass dependent detector. The review article focuses on principle, working, advantages, disadvantages and applications of Charges aerosol detector.

OP - 5

Ketene Dithioacetal Versatile Intermediates in Organic Synthesis

Mahesh M. Savant

Department of Chemistry, Shree M. & N. Virani Science College,

Rajkot, 360005, Gujarat, India

Email ID: maheshsavant84@gmail.com

Abstract

Ketene dithioacetals are versatile intermediates in organic synthesis. Extensive research, since the last decade, has given rise to new prospects in their chemistry. Ketene dithioacetals having functional groups at α-positions are extremely 1-3 important multifunctional intermediates in organic synthesis. Functional groups present at the position are usually electron withdrawing groups, due to the relative ease in their preparation. α -Nitro and α-Oxo ketene dithioacetals have been found to be highly versatile synthon for the synthesis of heterocycles. Any carbonyl compound having an active methylene group can be transformed to corresponding α -oxo ketene dithioacetals under suitable conditions. Since carbonyl group is abundant in organic molecules a large number of α -oxo ketene dithioacetals are also known.

RKUNIVERSITY

OP – 6

Thermal Analysis of Antihypertensive Drug Doxazosin Mesilate

Bhavin Dhaduk

Department of Chemistry, School of Science, RK University, Rajkot, 360020

Email ID: bhavin.dhaduk@rku.ac.in

Abstract

Thermogravimetry and differential scanning calorimetry (DSC) are useful techniques that have been successfully applied in the pharmaceutical industry to reveal important information regarding the physicochemical properties of drug and excipient molecules such as stability, purity and formulation compatibility among others. The present work reports studies of the thermal behavior of antihypertensive drug doxazosin mesilate as raw material and in the form of tablets. The purity was determined by DSC and specialized pharmacopeia method. Analysis of the DSC data indicated that the degree of purity of was like that found by the official HPLC method used in the British pharmacopoeia, BP 2011. The simplicity and sensitivity of thermal analysis justify its application in the quality control of pharmaceutical compounds.

RKUNIVERSITY

OP - 7

Estimation of Pranlukast Hydrate in the Presence of Degradation Products in Dry Syrup Formulation by RP-HPLC-PDA

Amit Vyas, Chintan Trivedi, Ashok Patel, Ajay Patel and Nilesh Patel

B.K.Mody Govt. Pharmacy College, Rajkot, Gujarat, India

Email ID: chintan26193@gmail.com

Abstract

A simple, rapid, precise, and accurate isocratic reversed-phase HPLC was developed, optimized and validated for the determination of Pranlukast hydrate in dry syrup formulation in the presence of Degradation impurities. The effective chromatographic separation was achieved by an Inertsil ODS (150 x 4.6 mm, 5 µm) column using mobile phase composed of Acetonitrile: Acetate buffer (45:55 %v/v) at a flow rate of 1.0 mL/min using UV-PDA detector at 256 nm.

Drugs were subjected to the acid, base, oxidation, heat, and photolysis to apply the stress. The total run time was 30 min within which active compound and their degradation products were separated. The method was found to be specific enough to separate all degradation products from the main analyte. The described method was validated with respect to system suitability, specificity, linearity, accuracy, precision, and robustness as per ICH Q2 Guideline. The method was linear in the range of 0.5 to 3.5 µg/ml (R2 = 0.9980). The limit of detection and limit of quantitation was 0.17 µg/ml and 0.5 µg/ml respectively. The recovery was 96.96% to 101.76%. The robustness study was done by small changes in flow rate and the ratio of Organic phase (Acetonitrile) in the mobile phase and the result of each parameter was meet with its acceptance criteria. So it was concluded that the method is fast and is suitable for high-throughput analysis of this drug in the presence of degradation products.

Keywords*:* Pranlukast Hydrate, Estimation, Degradation Products, Validation, Dry Syrup, RP-HPLC-PDA.

RKUNIVERSITY

OP - 8

Synthesis and Antimicrobial Activity of 2-{[(4'-arylidine-5'-oxo-2' phenyl) imidazolyl]-1'yl}-3-phenyl Propanoic Acids

G. V. Vagadiya[1], D. M. Purohit[2] and S. B. Koradiya[3]

[1] Department of Industrial Chemistry, Atmiya University, Rajkot, 360005, Gujarat, India

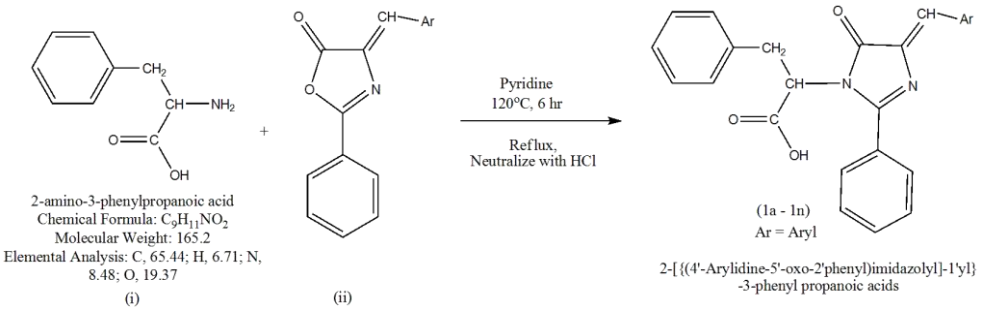
[2] Shree M. & N. Virani Science College, Kalawad Road, Rajkot, 360005, Gujarat, India

[3]Department of Chemistry, Atmiya University, Rajkot, 360005, Gujarat, India

Email ID: govindvsoni@gmail.com

Abstract

5-Oxo-imidazoline derivatives shows good therapeutic activity, with a view of getting to synthesis 2-[{(4'-arylidine-5'-oxo-2'-phenyl)imidazolyl]-1'-yl}-3-phenyl propanoic acid (1a – 1n) have been synthesized, all the synthesized compounds were characterized by TLC, IR, ^{1}H NMR, Mass spectral data. All the synthesized compounds (1a – 1n) were screened with antimicrobial activity.



2-amino-3-phenylpropanoic acid
Chemical Formula: $C_9H_{11}NO_2$
Molecular Weight: 165.2
Elemental Analysis: C, 65.44; H, 6.71; N, 8.48; O, 19.37

(i) (ii)

2-[{(4'-Arylidine-5'-oxo-2'phenyl)imidazolyl]-1'yl} -3-phenyl propanoic acids

Keywords: 5-oxo-imidazolines, antimicrobial activities.

RKUNIVERSITY

OP - 9

Development and Chemical Reaction of Carbohydrates

S. S. Kasmani[1], A. M. Parmar[2], V. A. Modhavadiya[3] and B. M. Bheshdadia[4]

[1,2]Shri M. P. Patel B.Ed. & Science College, Jodhpar (Nadi), Gujarat, India

[3,4]M. M. Science College, Morbi, Gujarat, India

Email ID: sarfrajmeman683@gmail.com

Abstract

Carbohydrates include sugars, starches, and dietary fibers. Resistant starches resemble fiber in their behavior in the intestinal tract and may have positive effects on blood glucose levels and the gut microbiome. Fibers are classified as soluble and insoluble, but most fiber-containing foods contain a mixture of soluble and insoluble fiber. Soluble fiber has been shown to lower low-density lipoprotein cholesterol levels. Many artificial sweeteners and other sugar substitutes are available. Most natural sources of sweeteners also are energy sources. Many artificial sweeteners contain no kilocalories in the amounts typically used. Sugar alcohols may have a laxative effect when consumed in large amounts. Glycemic index and glycemic load are measurements that help quantify serum glucose response after ingestion of particular foods.

OP - 10

Principles, Examples, Uses and Recent Advancement of Green Chemistry

S. S. Chavda[1], A. D. Bhadja[1] and D. R. Bhadja[2]

[1]Shri M. P. Patel B.Ed. & Science College-Jodhpar (Nadi), Gujarat, India

[2]M. M. Science College, Morbi, Gujarat, India

Email ID: surajchavda31799@gmail.com

Abstract

Our environment, which is endowed by nature, needs to be protected from ever-increasing chemical pollution. The challenge for the institution and industries is to come together and pursue development in the field of greener chemistry by reducing or eliminating the use and generation of hazardous substances. We have organized a national and international symposium for promoting green chemistry in India, which has provided the platform for interaction of concepts among the leading scientists. The main idea behind this to activate work toward green chemistry for which involvement of academic, industrial, and governmental and non-governmental bodies is needed collectively, which will help the designing and development of environment-friendly chemistry practices in India.

RKUNIVERSITY

OP – 11

Synthesis Characterization and Anticancer Activity of Novel (E)-N1, N1-bis (2-chloroethyl)-N4-((1, 3-diphenyl-1H-pyrazol-4-yl) methylene) benzene-1, 4-diamine

A. P. Barasara[1], Y. J. Sanghani[2], Hardik Bhatt[3] and Deepak Purohit[4]

[1,2]School of Science, RK University, Kasturbadham, Rajkot, Gujarat, India

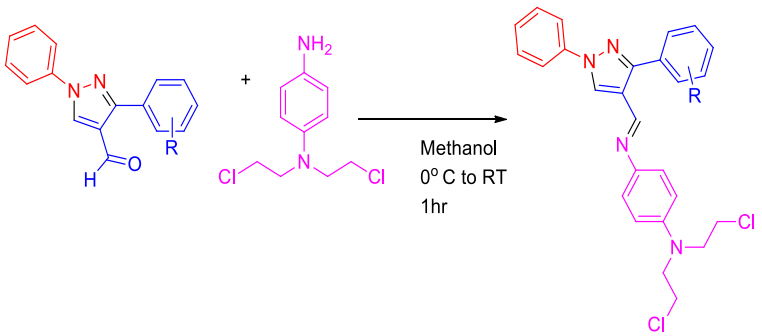
[3]Om College of Science, Junagadh, Gujarat, India

[4]Shree M. & N. Virani Science College, Rajkot, Gujarat, India

Email ID: ashwinbarasara59@gmail.com

Abstract

We have developed highly functionalized Schiff base of substituted pyrazolo aldehyde with aniline nitrogen mustard. Methodology involves condensation of substituted pyrazolo aldehyde and aniline mustard in methanol as a solvent and catalytic amount of glacial acetic acid at 0^0 C to room temperature which yield (E)-N1, N1-bis (2-chloroethyl)-N4-((1,3-diphenyl-1H-pyrazol-4-yl)methylene)benzene-1,4-diamine. Important intermediate aniline mustard was synthesized from 4-fluoro nitrobenzene. 4-floro nitrobenzene on reaction with diethanol amine gives 2,2'-((4-nitrophenyl)azanediyl)diethanol which on further chlorination yield N,N-bis(2-chloroethyl)-4-nitroaniline. Finally reduction of N, N-bis(2-chloroethyl)-4-nitroaniline with Sn/HCl gives aniline nitrogen mustard. The entire synthesized library was characterized by NMR, IR, and MASS etc. spectroscopic method and screened for anticancer assay on Human Colon Cancer Cell Line Colo-205



RKUNIVERSITY

OP - 12

Antioxidant Potential of Various Fractions of *Launaea Pinnatifida* Leaves and Roots Extracts by *in vitro* Methods

Himanshu T Makwana and Devang J Pandya

School of Pharmacy, RK University, Bhavnagar Highway, Kasturbadham, Rajkot, Gujarat, India

Email ID: himanshu23makwana@gmail.com, devang.pandya@rku.ac.in

Abstract

According to the Ayurvedic literature *Launaea pinnatifida* Cass is belong to the class of controversial drug *Gohjiva*. This plant is well know and valuable herb as per the traditional and Ethnobotanical information. Leaves of this plant has been used since ancient time as herbal remedy for jaundice, diuretic, blood purifier and hepatoprotective action by the tribal people of the Western Ghats. However, the plant remains largely unexplored. The antioxidant capacity of the various fraction of *L. Pinnatifida* leaves and roots extracts, obtained by successive solvent extraction with various polarity of solvents namely Pet. Ether, Chloroform, Methanol and Water, was evaluated by means of different *In vitro* methods; DPPH radical scavenging activity (IC_{50} value for standard ascorbic acid and *L. pinnatifida* leaves methanol fraction was 165.8 and 220.3 respectively), Ferric ion reducing antioxidant power assay (FRAP) and total antioxidant capacity (TAC) by Phosphomolybdenum method. Those findings means that *L. Pinnatifida* leaves methanol fraction was most active fraction for free radical scavenging activity compared to all other fractions hence consider as a most potent fraction for the isolation of phytochemical also used in a food industry for protection against oxidative damage. Antioxidant results also support the traditional claim of this plant. The strongest antioxidant activity of methanol fractions of leaves could be due to the presence of flavonoids and phenols.

Keywords: *Launaea pinnatifida*, Gojihva, Antioxidant assay, DPPH, Successive solvent extraction.

RKUNIVERSITY

OP - 13

Girnar Mountain Forest Soil Near Herbal Plant Area Screening Study of Actinomycetes for Antimicrobial Activity with Characterization of Active Isolates

Darshit Ram[1,2] and Devang Pandya[2]

[1]Noble Pharmacy College, Junagadh, Gujarat

[2]School of Pharmacy, RK University, Rajkot, Gujarat, India

Email ID: dramahir@gmail.com

Abstract

Present study screening of soil actinomycetes near herbal plant area in Girnal mountain region of Junagadh district of Saurashtra Gujarat in respect to its antimicrobial activity and biochemical characterization of active isolates. 11 different herbal plant sites selected randomly from Girnar mountain area. Soil collected from microflora part of soil depth up to 30 cm with sterile articles used. Samples treated and serially diluted for good colony result. Different growth and ISP media tested for colony study and make pure culture using microbial method. Morphological and microscopic study was done of colonies. Antimicrobial activity checked by cross streak method tested against various test pathogens. Secondary screening was done by agar well diffusion method. Various biochemical testes for characterization were done of active isolates. 23 isolates of actinomycetes were observed with dominant arial mycelium white color in 56.52 % of isolates and 43.48 % yellow color in vegetative mycelium. 13 (56.52 %) isolates were classified and belongs to streptomyces genus. More than 20 mm ZOI (Zone of inhibition) observed in 3 isolates (against *Bacillus subtilis*), 4 isolates (against *Staphylococcus aureus*), 2 isolates (against *Proteus vulgaris*), 2 isolates (against *Escherichia coli*) and 2 isolates (against *Klebsiella aerogenes*). JRI1, JOS1, JAC1, JTF1 and JPC1 were observed most active isolates. Out of active isolates range of ZOI was between 15 to 20 mm is most frequently observed. 11 isolates showed activity and 12 isolates not showed any activity against test pathogens. Soil actinomycetes near some medicinal plant area of Girnar forest sites contain actinomycetes which have antagonistic activity. As Girnar forest was very rich source of herbal medicinal plants we correlate soil actinomycetes screening study for antimicrobial activity samples taken near plant area and these ecological sites had potential to produce new antimicrobial compound with other metabolites from those actinomycetes.

Keywords: Actinomycets, Mycelium, Antimicrobial, Isolate, Medicinal

RKUNIVERSITY

OP - 14

Carica papaya Mediated Synthesis of Copper Nanoparticles as Novel Antibacterial Nanomaterial in Textile Surface Modification

Bhavika Turakhia, Amisha Patel and Sejal Shah

Department of Microbiology, School of Science, R K University, Rajkot, 360020, Gujarat

Email ID: sejal.shah@rku.ac.in

Abstract

Copper nanoparticles (CuNPs) have gain enormous attraction due to their special antifungal and antibacterial properties. High medicinal properties and inbuilt antibacterial property of *Carica papaya* engrossing us to work with it. Green synthesis of metal NPs has received considerable attention due to its non-toxic, eco-friendly and cost-effective nature. The paper reports the enhance antimicrobial, tensile strength, hydrophobic property of cotton fabric when coated with CuNPs synthesized from *Carica papaya* as compare to conventional fabric. The phytochemicals and polyphenols present in the leaf has a main role as reducing and capping/stabilizing agent. The prepared nanoparticles were further used to check its antioxidant and antidiabetic activity. The characterization of the CuNPs were investigated by color change, UV-Visible spectroscopy (UV-Vis spectroscopy), Fourier transform infrared spectroscopy (FT-IR) and X-ray crystallorgraphy (XRD). Treated cotton fabric shows higher tensile strength (34MPa) than the untreated one (27 MPa); whereas, iron nano coated cotton fabric exhibits a fair hydrophobicity. Further, CuNPs treated and untreated cotton fibers and cotton fabric have been analyzed for bactericidal activity against different gram positive and gram negative bacteria. Their results explain that CuNPs coated cotton fibers and cotton fabric showed greater antibacterial activity against *E.coli.,* while nano coated cotton fabric exhibits superior antimicrobial activity even after 30 cycles of washing. Inferring from the above results, it is evident that the developed nano coated cotton fabric has a high potential to be employed as a medical textile to avoid cross-infections within a clinical environment.

Keywords: Copper nanoparticles, antibacterial activity, Nanocoated cotton fabric, XRD

RKUNIVERSITY

OP - 15

Feed Dependent, Cross Species Comparative Analysis of Rumen Metagenome of Three Ruminants from Gujarat

Hadmat Gadhavi[1], Chetan Mehta[1], Vishal Mevada[1], Rajesh Patel[2] and Rajesh Chaudhary[3]

[1]Shri Sarvajanik Science College, Mehsana

[2]Bio-Sciences Department, VNSGU, Surat

[3]Nilkanth Science College, Maktupur

Email ID : raj252000@gmail.com

Abstract

Rumen microflora has extraordinary capability of fermenting cellulose-containing fiber to volatile fatty acid, glucose, hydrogen, carbon dioxide and synthesizes growth promoters like vitamin B and good quality protein by the enzyme. Rumen flora belongs to the extreme environment and their diversity and metabolic pathway contracted curiosity of the scientific community. Methanogens contribute to global warming by reducing carbon dioxide to methane in presence of Hydrogen. The abundance of Methanogens vary by external and internal factors and methane emission can be decreased. In the present study, various metadata repositories such as MG-RAST and EBI were used to retrieve a file in FASTq formats from publicly available metagenome reads of Rumen microflora of ruminant animal and their breed such as a cow (*Bos tourus*), buffalo (*Bubalus bubalis*),. Total 144 samples used for feed dependent study of methanogens and microbial diversity with different species of the ruminant. The analysis of the nucleotide sequences performed on various tools and server like One codex, MG-Rast, Stamp, Megan, Community analyzer. The present study concludes that various breed of a ruminant animal role in a different ratio to global warming, feed dependent methanogen abundance may change by varying feed the methane emission can be decreased.

Keywords: Rumen microflora, *Bubalus bubalis*, rumen metagenome, methanogen

RKUNIVERSITY

OP - 16

Study of Halophilic Archaeal Diversity from Little Rann of Kutch and Grater Rann of Kutch, Gujarat, India

Niyati Desai, Chetan Mehta, Himani Gandhi and Rajesh Patel

Department of Bioscience, Veer Narmad South Gujarat University, Surat, 395007, Gujarat, India

Email ID: niyatidesai10@gmail.com

Abstract

The Wild Ass Sanctuary, Little Rann of Kutch, is a typical ecological system with saline desert climate having least floral diversity and exclusive faunal diversity. Unexplored hyper saline ecosystem in India is the Gujarat's Greater Rann of Kutch, largest saline desert in world. Archaea that live at high salt concentrations are a phylogenetically diverse group of microorganisms. The presences of novel microbes with high economic and industrial potential are observed. In present work, we studied comparative community analysis of Archaeal diversity with metagenomic approach and web based One Codex server. The higher Archaeal abundance recorded for *Haloarcula hispanica* followed by *Halobacterium salinarum* from S8 (Little Rann of Kutch). The highest abundance from S1 to S7 (Greater Rann of Kutch) observed for *Halomicrobium mukohataei, Halobellus rufus, Halorubrum hochstenium* from S1 to S7 Halophilic Archaea have ability Carbon sequestration that exponentially decreases Global warming. Consequently, results suggest rich halophilic archaeal diversity with possibility of getting novel genes for research and commercial application from Little Rann and Greater Rann of Kutch, Gujarat, India.

RKUNIVERSITY

OP - 17

Study of Actinomycetes as a Biocontrol Agent against Pigeon Pea Pathogen *Fusarium oxysporum* and *Fusarium udum*

A.A. Karavadra, A.S. Dave and S.S. Ingle

Department of Microbiology, M.S. University, Baroda, 390002, Gujarat, India

Email ID: asha.karavadra@rku.ac.in

Abstract

The search for new biocontrol strategies to inhibit the growth of phytopathogenic fungi has become widely widespread due to economic and environmental concerns. Wilt caused by *Fusarium udum* and *Fusarium oxysporum* is the major constraint to pigeon pea production worldwide. Nevertheless, Actinomycetes are less studied than other biocontrol agents against Fusarium diseases. Plant diseases incited by Fusarium species are notably challenging. Being a vascular pathogen, *F. oxysporum* and *F. udum* is particularly difficult to control by using microbial antagonists. The main objective of the present study was isolation, characterization and identification of actinomycetes from soil samples, having potential antifungal activity against *Fusarium spp.* Soil samples were taken from the rhizospheric soil of pigeon pea (Jamnagar, Gujrat). These samples were serially diluted and plated on actinomycete isolation agar media. Total eight potential colonies were screened and purified. Eight Isolates were morphologically characterized by Gram staining. Antifungal activity of isolates carried out. Three isolates were found to be most promising antifungal among eight isolates, which were S-9, S-11and S-142. Identification of isolates S-9, S-11and S-142 by16S rRNA sequencing was carried out and isolates identified as *Streptomyces species SP. BOUKAS03, Streptomyces hygroscopicus strain S10* and *Streptomyces spiralis strain KML-1* respectively with 99% homology. Antifungal activity of the purified extract of isolates were evaluated which were further used for TLC analysis. S-9 isolate extract gives resolved band on TLC plate.

RKUNIVERSITY

OP - 18

Dye Degradation and Antimicrobial Applications of Manganese Ferrites Nanoparticles Synthesized by Plant Extracts

H. B. Desai, Asfeeaz Chaudhari, Taslim Kaida, Sougata Ghosh and A. R. Tanna

School of Science, RK University, Rajkot, 360020, Gujarat, India

Email ID: ashish.tanna@rku.ac.in

Abstract

Manganese ferrite nanoparticles are synthesized using biological agents as a fuel by the self-combustion method using ginger root/cardamom seeds extract. The green synthesis of manganese ferrite is eco-friendly, inexpensive and easy to produce in large scale of solid materials. Plant extract mediated $MnFe_2O_4$ nanoparticles are characterized by various techniques to analyze the size, structure, crystallinity and photocatalytic properties. Energy-dispersive X-ray spectroscopy analysis confirmed the presence of manganese, iron and oxygen elements. The X-ray diffraction pattern showed spinel structure and endorsed by Fourier Transform Infrared Spectra (FTIR). Formation of porous structure and the morphology of prepared materials are studied by Scanning Electron Microscopy (SEM) images. This type of structure is useful for the photocatalytic dye degradation of Methylene Blue in the visible light under the influence of various concentration of H_2O_2. Fenton type effect is observed in visible spectrophotometer for dye degradation. The effects of $MnFe_2O_4$ ginger root (MnG) and $MnFe_2O_4$ cardamom (MnC) (100 ug) are tested against *Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus and Bacillus subtilis* on Mueller Hinton agar plates using well diffusion assay and the zones of inhibition measured.

Keywords: Green synthesis, nano-ferrite, photocatalytic, Fenton effect, antimicrobial activity

RKUNIVERSITY

OP - 19

Carrier Transport Investigation in Carbon and Zinc Doped Armchair Boron Nitride Nanoribbons

K.R. Sangani[1], A.A. Pandya[2] and P.K. Jha[3]

[1]Institute of Science, Nirma University, Ahmedabad, Gujarat, India,

[2] Institute of Technology, Nirma University, Ahmedabad, Gujarat, India,

[3]Department of Physics, Faculty of Science, The M.S.University Baroda, Vadodara, Gujarat, India

Email ID: sanganikeyur3670@gmail.com

Abstract

The emerging field of nanoelectronics and spintronics devices is seeking novel 2D ferromagnetic semiconductors to preserve magnetism beyond room temperature which is possible by doping of carbon and transition metals in crystal host lattice that possess comparatively smaller lattice parameters such as boron nitride based nanostructures [1, 2]. This is considered as one of the important technological frontiers because the Curie temperature (T_c) is observed inversely proportional to the third power of the crystal host lattice parameter [3]. Boron nitride nanoribbons (BNNR) fulfil such criterion of having small lattice parameters quite well [4]. BNNR has bond length comparable to Graphene Nanoribbons (GNR), as a result it has higher Curie temperature (T_c) making it a suitable candidate for fabrication of memory storage devices at extreme temperatures (e.g. on space satellites). Suitable doping improves the electron transport through nanostructured devices. Motivated with this fact in this paper the theoretical calculations of electronic transport parameters such as hot electron mobility and transverse acoustical phonon limited resistivity of armchair boron nitride nanoribbon (aBNNR) doped with carbon and zinc has been carried out individually for low temperature regime under the effect of both electric and magnetic fields. The calculations involve interactions of electrons with acoustical phonons via piezoelectric (PZ) mechanism [5, 6] because it is one of the dominant mechanisms which is responsible for electrons relaxation while traversing via the passage of nanostructure at low temperature regime.

RKUNIVERSITY

OP - 20

Gain Flattened Wideband Raman Amplifier for DWDM System

Vivekanand Mishra

C. U. Shah University, Surendranagar, Gujarat

Email ID: vive2009@gmail.com

Abstract

Raman amplifier is an open area of research in telecommunication field. This paper discusses the performance of 64 channels of 10Gbps WDM systems with backward multipump Raman amplifier. The main goal of this paper is the optimization of Raman amplifier to minimize its gain variation without using any gain flattening techniques.To increase the transmission capacity of DWDM system, Raman amplifier with backward multipump configuration is implemented. This amplifier design will be helpful for CATV applications and telecommunication networks.

Keywords: Raman Fiber Amplifier, Non zero Dispersion shifted fiber, Dense Wavelength Division Multiplexing (DWDM)

OP - 21

Application, Manufacturing Method of Novel Pollution Free Engine

J. R. Ramoliya, A. P. Mandani, U. A. Kalariya and R. J. Saradava

Shri M. P. Patel B.Ed. & Science College, Jodhpar (Nadi), Gujarat, India

Email ID: jigshpatel1212@gmail.com

Abstract

Our country has a limited amount of diesel and petrol. So we have brought this engine to you. Diesel or Petrol is not used but run by battery. The energy generated by this single battery and the amount of energy consumed in it will be generated as well. So once the battery is charged, no longer have to give any kind of energy and there is no pollution.

RKUNIVERSITY

OP - 22

History, Application and Examples of Vedic Mathematics

R. V. Kanjariya and P. B. Chavda

Shri M. P. Patel B.Ed. & Science College, Jodhpar (Nadi), Gujarat, India

Email ID: rajkanjariya333@gmail.com

Abstract

Vedic Mathematics is a book written by the Indian monk Swami Bharati Krishna Tirtha and first published in 1965. It contains a list of mental calculation techniques claimed to be based on the Vedas. The mental calculation system mentioned in the book is also known by the same name or as "Vedic Maths" **Vedic Mathematics** is a collection of Techniques/Sutras to solve mathematical arithmetics in easy and faster way. It consists of 16 Sutras (Formulae) and 13 sub-sutras (Sub Formulae) which can be used for problems involved in arithmetic, algebra, geometry, calculus, conics, etc.

RKUNIVERSITY

PP - 1

Sphingobacterium thalpophilum DP9-A Novel Plant Growth Promoting Species Isolated from Automobile Workshop Soil

Dhaval Patel[1], Dipal Prajapati[1], Payal Bodar[1], Debayan Baidya[2], M. Nataraj[1] and Snehal Ingale[3]

[1]Post graduate Department of Biosciences, Sardar Patel University, Vallabh Vidyangar-388120, Gujarat, India
[2] P.D.Patel Institute of Applied Sciences, Charusat University, Changa, Anand, Gujarat, India
[3] Ashok and Rita Pate Institute of Integrated Biotechnology and Applied Sciences, Sardar Patel University, New Vvn, Anand, Gujarat, India
Email ID: dhaval30103@gmail.com

Abstract

Rhizosphere is dynamic layer, which surrounds the plant root. Rhizospheres get disturbed when soil is contaminated with hydrophobic substances. Many of farmers rely on diesel engine for irrigation as well as other agricultural activities. Therefore, there are chances of contaminating agricultural land with diesel like petroleum hydrocarbon fuel and become less useful for farming purpose. Biosurfactants are amphiphilic molecules produced by certain bacteria to use hydrophobic substances for their survival. In the present study, plant growth promoting attribute of biosurfactant producing bacteria was analyzed. DP9 was one of the eight isolates gave highest hemolytic zone (1.36 ±0.11 mm) on blood agar plate evinced its candidature as biosurfactant producer. DP9 was biochemically characterized and its plant growth activities were also studied. DP9 produces indole acetic acid and solubilized phosphate. It also secretes enzymes like oxidase and protease. 16s rRNA sequence analysis revealed 98% sequence similarities with *Sphingobacterium thalpophilum* (GenBank Accession number: MG013500). It effectively enhanced the growth of shoot and root, chlorophyll content, fresh and dry weight under both *in situ* and *ex situ* conditions in mungbean (*Vigna radiata*). *Sphingobacterium* species DP9 was an endophytic bacterium. Results of these investigations prove the potential application of *Sphingobacterium* species DP9 for plant growth promotion under hydrocarbon contaminated environment.

RKUNIVERSITY

PP - 2

Morphological and Biochemical Characterization of Cultivable Bacteria Isolated from Salivary Extract of Therapeutic Leech [*Hirudo granulose*] before and after Use

Khushbu Koriya, Dhaval Patel, M Nataraj and Jyoti Solankiale[3]

Department of Biosciences, Sardar Patel University, Vallabh Vidyanagar-388 121, Anand, Gujarat, India

Email ID: dhaval30103@gmail.com

Abstract

'Hirudotherapy' (use of therapeutic leech) is one of the conventional techniques used for treating skin diseases. *Hirudo granulose*- an Indian cattle leech, is frequently used for treatment of skin disease like psoriasis and eczema. Leech saliva contains many biologically active proteins, peptides and enzymes. Leech used for therapeutic purpose is not used again for the same purpose. Moreover, gut flora of leech may develop immune reaction in host body. Therefore leech with sterile or lower number of gut microbes are prefered. With reference to that, in the present study attempt was made to characterize salivary bacterial flora of *Hirudo granulose* – a therapeutic leech, before and after the use. Fourteen bacterial isolates were obtained from unused leech while thirteen were isolated from used leech. Among fourteen bacteria from unused leech, five were Gram negative and others nine were Gram positive bacteria. Similarly, out of thirteen isolates from used leech five were Gram negative while other eight were Gram positive. Biochemical analysis revels that isolates from unused leech saliva belongs to *Pseudomonas, Proteus, Micrococcus, Streptococcus* and *Staphylococcus* species. Treated leech salivary bacteria were member of genus *Pseudomonas, Staphylococcus, Comamonas, Escherichia, Citrobactor, Aeromonas, Providencia, Entrobacter* and *Yersinia.* Result indicates that microbial makeup of saliva was partially changed after treatment.

RKUNIVERSITY

PP – 3

Development of a RP-UPLC method for the determination of process impurities and degradation products of Ranolazine in pharmaceutical dosage forms and characterization of the oxidative degradation products by mass spectroscopy.

Sandeep. R. Rana[1,2], Z. M. Gadhawala[3], Rakshit Patel[2] and Dilip Ghava[2]

[1]HNGU university, Patan, Gujarat, India
[2]Piramal Enterprises Ltd; Ahmedabad, Gujarat, India
[3]The HNSB Ltd. Science college, Himmatnagar, Gujarat, India
Email ID: rana1975deep@gmail.com

Abstract

A sensitive and rapid stability-indicating, reverse-phase ultra-performance liquid chromatographic (RP-UPLC) method has been developed and validated for the analysis of Ranolazine in the presence of both process impurities and degradants generated by stress studies. The stress studies performed according to the International Conference on Harmonization (ICH)-prescribed hydrolytic, oxidative, photolytic and thermal stress conditions. Ranolazine underwent extensive degradation when exposed to oxidative stress condition, while it is demonstrated to be stable under acidic, alkaline, thermal and photolytic degradation. The separation of all these impurities was achieved using Zorbax RRHD Bonus RP C18, 150mm x 2.1mm, 1.8µm column, UV detection at 225 nm and a gradient elution of pH 7.3 phosphate buffer and acetonitrile as mobile phase. The sequential pathway for the fragments was attained through the acquired mass spectra from drug and its degradation impurities through LC/MS studies. There were two major oxidative degradants N-Oxide and Di-N-oxide were characterized by comparing with the pattern of drug molecule fragmentation. The detailed degradation mechanism of Ranolazine under oxidative stress conditions is proposed based on the LC-MS data. The stability indicating nature of this technique was validated as per the International Conference on Harmonisation guidelines.

RKUNIVERSITY

PP – 4

Seasonal variation of antioxidant and radical scavenging activities in selected brown seaweeds along the Gujarat coast

Tanna Bhakti [1,2] and Mishra Avinash[1,2]

[1]Division of Biotechnology and Phycology, CSIR-Central Salt and Marine Chemicals Research Institute, G. B. Marg, Bhavnagar, 364002, Gujarat, India
[2]Academy of Scientific and Innovative Research (AcSIR), Council of Scientific and Industrial Research, Gaziabad, India
Email ID: tanna.bhakti90@gmail.com

Abstract

First life form was developed in oceans about 3,500 million years ago. From thenon, evolution of marine life has taken place and marine environment has developed plenty of varietiesin its living form, which can survive in extreme conditions. Seaweeds are rich source of carbohydrates, proteins, minerals, vitamins, and polyunsaturated fatty acids. In addition, they contain natural antioxidants and other metabolites, therefore, they are considered efficient source of functionalfood. Seaweeds are mainly divided into three classes:phaeophyta (brown algae),rhodophyta (red algae) and chlorophyta (green algae) as per their pigmentcomposition.Seaweeds are being used in many food items especially in Asian countries from ancient times. Seaweeds encounterwith type of of stresses due to oceanic conditions,which affect their metabolite composition.Brown seaweeds are considered to have high amount of phenolic compounds, which help them to survive underadverseconditions.In thisstudy, we have collected abundant brown seaweeds (*Iyengariastellata*- IS and*Stoechospermum marginatum*- SM) in two different growing time periods– Jan-March and Nov-Dec to evaluate the effect of seasons on their antioxidant and radical scavenging potential.We observed that seaweeds collected duringNov-Dec period had shown high anti-proliferating activity on Huh-7 cell lines that is 70.96 and 56.17µg for IS and SM, respectively. The EC50 for scavenging DPPH radical was also observed lower (hence high activity) in Nov-Dec samples-778.63 and 829.10for IS and SM, respectively. This might be due to their higher flavonoid content observed in that period which was 178.00 and 215.07mg/ml quercetin per g extract for IS and SM, respectively. Thus, we have concluded that due to inflow of high nutrient content in ocean duringrain is the main reason for high flavonoid content and higher scavenging and anti-proliferative activity in the examinedbrown seaweeds.

RKUNIVERSITY

PP - 5

A Prevalence of Breast Cancer in Saurashtra Region

Girish Goswami and Vishwa Vyas

Life science Department, C.U. Shah University, Surendranagar, Gujarat, India
Email ID: vyasvishwa10296@gmail.com

Abstract

Cancer is a group of diseases that cause cells in the body to change and spread out of control. Most types of cancer cells eventually form a lump or mass called a tumor, and are named after the part of the body where the tumor originates. Most of breast cancers begin either in the breast tissue made up of glands for milk production, called lobules, or in the ducts that connect the lobules to the nipple. The remainder of the breast is made up of fatty, connective, and lymphatic tissues. Breast cancer incidence and death rates generally increase with age. Breast cancer occurs in all climates and in all races but its incidence and distribution vary from country to country and within each country. According to the reports, breast cancers have badly attacked women population in India. Surveys carried out by NICPR 1,62,468 cases of breast cancer are newly registered and 87,090 deaths are in India (in 2018). According to GCSRJ (2014) 11,495 cases out of 49,321 cases of breast cancer are registered in Saurashtra region of Gujarat.

PP – 6

Cross Biome Assessment of Desert and Marine Metagenome of Western Indian Areas

Chetan Mehta[1], Hadmat Gadhav[1], Vishal Mevada[1] and Rajesh Patel[2]

[1]Sarvajanik Science college, Mehsana, Gujarat, India
[2]Bio-Sciences Department, VNSGU Surat, Gujarat, India
Email ID: hadmat209@gmail.com

Abstract

Major obstacles of study regarding the extremophiles is the cultivation of the microorganism. Nucleotides Sequencing based metagenomics approach avail the hidden information of the specific ecosystem. In the present study metagenome from four different halophilic ecosystem-Saline Desert Little Rann of Kutch, Greater Rann of Kutch, Banni Region of Kutch & From Mangrove Soil Sample of Dandi, Mangrol & Umargam, has been sequenced and analysed.There is difference of abundance among all phylum living in a diverse habitat was noticed. Greater Runn, Little Rann, Marine And Banni region contains 21, 5 20, 13 Phylum present respectively several halophiles have ability to sequestration of CO_2 which have potential to lower global warming novel enzyme gene and organism architect attraction of this study. An attempt was carried out to isolate and analyze the metagenome from halophilic ecosystems. The metagenome Data was taken from the EBI Metagenomic Platform in jsonbiom format. Metagenome analysis was carried out in MEGAN, STAMP, PICRUST, EBI Metagenomics, PAST, Community Analyser.

RKUNIVERSITY

PP – 7

Study of Dielectric Characteristics of Bulk Cadmium Selenide (CdSe) Pellet

Nidhi Shah[1], Vimal Patel[1], S. M. Vyas[1], Piyush Patel[1] and M. P. Jani[2]

[1]Department of Physics, School of Sciences, Gujarat University, Ahmedabad-380009, Gujarat, India
[2]Neotech College, Virod, Vadodara, Gujarat, India
Email ID: nshah718@gmail.com

Abstract

A pellet (BULK) of cadmium Selenide (CdSe) has been prepared by using compression technique with pelletizer. Cadmium Selenide (CdSe) pellets was used for the investigation of dielectric properties as a function of frequency in range from 20Hz to 20 MHz using precision LCR meter. A preliminary investigation like dielectric constant (ε′), dielectric loss (ε″) and extensive quantities, i.e. conductivity (σ′), electric modulus (M), complex impedance (Z) has been calculated. All these properties are used to explore various processes contributed in the dielectric spectroscopy.

PP – 8

Dielectric spectroscopy of Binary Mixture of ADP and Pure Water in the Frequency Range 200MHz to 20GHz at Different Temperature

Vimal Patel[1], S. M. Vyas[1], Piyush Patel[1], Himanshu Pavagadhi[1] and M.P.Jani[2]

[1]Department of Physics, School of Sciences, Gujarat University, Ahmedabad-380009, Gujarat, India
[2]Neotech College, Virod, Vadodara, Gujarat, India
Email Id: vimalpatel082013@gmail.com

Abstract

The complex relative dielectric function $\varepsilon^*(\omega) = \varepsilon' - j\varepsilon''$ of binary mixture of ADP material with pure water at varying concentration have been measure using the VNA in the frequency range 200MHz to 20GHz at different temperature (303.15K, 313.15K, 323.15K). The electrical or dielectric properties are represented in terms of complex relative dielectric function $\varepsilon^*(\omega)$, complex electrical conductivity $\sigma^*(\omega)$, Complex electric modulus $M^*(\omega)$ and complex impedance $Z^*(\omega)$. All these properties are used to elaborate the various processes contributed in the dielectric properties of the mixture of ADP and pure water. Effect of different concentration variation and different temperature of binary system are discussed in detailed.

RKUNIVERSITY

PP – 9

Synthesis and Antimicrobial Scrrening of *O*-Aminoacetophenone Based Chalcones and Schiff Bases

Sai Pranathi Patimalla, Naimish Ramani, Komal Vekariya and Purvi Kakadiya

School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: nramani579@rku.ac.in

Abstract

Bearing the numerous biological and pharmaceutical activities and the ease in synthesis of Schiff bases and chalcones, one pot synthesis of chalcones and Schiff bases from *o*-aminoacetophenone was attempted in conventional method. The synthesized compounds were screened for possible antimicrobial and antifungal activities against a few strains of gram positive and gram negative bacteria and *C. albicans* fungi. The compounds F1 and G1 were observed to be potent antifungal agents against *C. albicans*, and the compound G1 invariably stood out as the most potent antibacterial agent against all the strains of bacteria tested but was found to be more efficient against *S. typhi*. The reactions were monitored by TLC and the synthesized compounds were characterized by GC MS and ^{1}H NMR spectroscopic methods.

PP - 10

Comparative Review between Renewable energy Sources based on energy efficiency parameters

Vijay Togadiya and Tejas Pandya

School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: tejasp44@gmail.com

Abstract

In the 21st century all over the world face the problem of energy crisis. Energy generation sources either renewable or non-renewable, we know that the non-renewable energy sources like crude oil, gas, etc in limited quantity, they are not refilled. Renewable resources can be refilled easily. Some of them (sunlight, air, wind, tides, hydroelectricity) are continuously available and their quantity is not affected by human consumption. India is one of the materialize country in the global economy. Rehabilitates happening in almost all the sectors. India is becoming development in energy, science, industries, infrastructure, etc. In the rural and urban areas need to revolutionize the energy sectors so more focusing on solar energy sources and wind energy sources. In the renewable energy sources, energy efficiency parameters are the most important parameter because it depends on the quality and quantity of the resource, the location of the resource, government-imposed costs. In this review paper trying to compare the energy efficiency parameters for the different renewable energy source. Based on these parameters easily analyzed the capacity of resources and usefulness for society, industries, etc.

RKUNIVERSITY

PP - 11

Detail studies on Atmospheric Physical Chemistry

P. K. Patel, B. S. Viththalapara and T. S. Patel

Shri M. P. Patel B.Ed. & Science College-Jodhpar Nadi, Gujarat, India
Email ID: parth9338@gmail.com

Abstract

Atmospheric chemistry is a branch of atmospheric science in which the chemistry of the Earth's atmosphere and that of other planets is studied. It is a multidisciplinary approach of research and draws on environmental chemistry, physics, meteorology, computer modeling, oceanography, geology and volcanology and other disciplines. Research is increasingly connected with other arenas of study such as climatology.The composition and chemistry of the Earth's atmosphere is of importance for several reasons, but primarily because of the interactions between the atmosphere and living organisms. The composition of the Earth's atmosphere changes as result of natural processes such as volcano emissions, lightning and bombardment by solar particles from corona. It has also been changed by human activity and some of these changes are harmful to human health, crops and ecosystems. Examples of problems which have been addressed by atmospheric chemistry include acid rain, ozone depletion, photochemical smog, greenhouse gases and global warming. Atmospheric chemists seek to understand the causes of these problems, and by obtaining a theoretical understanding of them, allow possible solutions to be tested and the effects of changes in government policy evaluated.

PP – 12

Advance Studies on Blood cancer

S. B. Kanzariya, B. R. Makasana and V. R. Moradiya

Shri M. P. Patel B.Ed. & Science College-Jodhpar, Nadi, Gujarat, India
Email ID: sureshkanzariya1999@gmail.com

Abstract

Introduction Blood cancer represents a large group of different malignancies. This group includes cencers of the bone marrow, blood, and lymphatic system, which includes lymph nodes, lymphatic vessels, tonsils, thymus, spleen, and digestive tract lymphoid tissue. Leukmeia and meyloma, which start in the bone marrow, and lymphoma, which starts in the lymphatic system, are the most common types of blood cancer. What causes these cancers is not known. As leukemia and meyloma grow within the bone marrow, they can interfere with the bone marrow's ability to produce normal blood cells, including white blood cells, red blood cells, and platelets. This can cause frequent infections, anemia, and easy bruising. Lymphomas, which most typically appear as enlagement of the lymph nodes, can also interfere with the body's ability to fight infections. Additionally, myelomas generate a substance that weakens bones, and produce abnormal proteins that can cause symptoms in other parts of the body. Treatment of blood cancers has undergone substantial improvements, resulting in increased rates of remission and survival. Remission occurs when there is no sign of cancer. Today in the United States, almost 1 million people are alive with, or in remission from, blood cancer. People who have blood cancer can have problems with bleeding and serious infections.

RKUNIVERSITY

PP – 13

OPTICAL FIBERS

Raj Amrutiya[1], Dhruv Kanjiya[2] and Rahul Jagodhara

[1]Shree M.P.Patel B.Ed & Science College Jodhpar, Nadi, [2]Saurashtara University, Rajkot Gujarat, India

Email ID: dhruvkanjiya5555@gmail.com

Abstract

An optical fiber or optical fibre is a flexible, transparent fiber made by drawing glass (silica) or plastic to a diameter slightly thicker than that of a human hair. Optical fibers are used most often as a means to transmit light between the two ends of the fiber and find wide usage in fiber-optic communications, where they permit transmission over longer distances and at higher bandwidths (data rates) than electrical cables. Fibers are used instead of metal wires because signals travel along them with less loss; in addition, fibers are immune to electromagnetic interference, a problem from which metal wires suffer excessively. Fibers are also used for illumination and imaging and are often wrapped in bundles so they may be used to carry light into, or images out of confined spaces, as in the case of a fiberscope. Specially designed fibers are also used for a variety of other applications, some of them being fiber optic sensors and fiber lasers.

PP - 14

Recent Application of Green Chemistry

K. K. Sadharakiy, L. P. Bhoraniya, D. A. Sarsavadiya and S. A. Kavar

Shri M. P. Patel B.Ed. & Science College-Jodhpar, Nadi, Gujarat, India

Email ID: sadharakiyakaushik9@gmail.com

Abstract

Our environment which is endowed by nature, needs to be protected from ever-increasing chemical pollution. The challenge for the institution and industries is to come together and pursue development in the field of greener chemistry by reducing or eliminating the use and generation of hazardous substances. We have organized a national and international symposium for promoting green chemistry in India, which has provided platform for interaction of the leading scientists The main idea behind this is to activate work toward green chemistry for which involvement of academic, industrial, and governmental and non - governmental organizations is needed collectively, which will help the designing and development of environment - friendly chemistry practices in India.

RKUNIVERSITY

PP - 15

Detail Studies on Gravitational Waves

A. V. Ajana, P. R. Kavar, D. N. Nagvadiya and M. J. Kardani

Shri M. P. Patel B.Ed. & Science College-Jodhpar, Nadi, Gujarat, India
Email ID: aditiajana123@gmail.com

Abstract

In Einstein's general theory of relativity, gravity is treated as a phenomenon resulting from the curvature of space time. This curvature is caused by the presence of mass. Generally, the more mass that is contained within a given volume of space, the greater the curvature of space time will be at the boundary of its volume. As objects with mass move around in space time, the curvature changes to reflect the changed locations of those objects. In certain circumstances, accelerating objects generate changes in this curvature, which propagate outwards at the speed of light in a wave-like manner. These propagating phenomena are known as gravitational waves. We have report about detailed studies on gravitational wave in this paper.

PP - 16

Synthesis, Application and Recent trends on Pesticides

J. N. Barasara, S. S. Barasara and M. R. Gothi

Shri M. P. Patel B.Ed. & Science College, Jodhpar, Nadi, Gujarat, India
Email ID: barasarajanvi@gmail.com

Abstract

Pesticides are used to kill Pests and insects which attack on crops and harm them. Different kinds of pesticides have been used for centuries. Pesticides benefit the crops; however, they also impose serious negative impacts on the environment. Excessive use of pesticides may lead to the destruction of biodiversity. Many birds, aquatic organisms and animals are under the threat of pesticides they are affected and dic also.

RKUNIVERSITY

PP - 17

Studies on Air-Ink

K. J. Kaila, A. M. Jakasaniya and R. J. Ambani

Shri M. P. Patel B.Ed. & Science College-Jodhpar, Nadi, Gujarat, India
Email ID: krupalikaila2807@gmail.com

Abstract

In the last few decades, Asia has grown exponentially. But this growth has come at a cost – air pollution. AIR-INK in the first made entirely out of air pollution. AIR-INK is based art products by condensing soot-based gaseous effluent generated by motor vehicles due to incomplete combustion of fossil fuels. Founded by Graviky Labs, a spin-off group of MIT Media Lab, Air Ink Produces its Material Through a step-by process which primarily involves capturing of emission, separation of carbon from the soot, and then mixing of this carbon with different types of oils and solution. It uses a patented device called ‘ Kaalink’ to carry out the filtration of soot , which contains carbon and other polluting agents like heavy metals and carcinogens. Air Ink is marketed as a solution to air pollution and its negative effects on human life. Dubbed as “the first ink made out of recycles air pollution,” its product were used in August 2016 in association with Tiger Beer to create street art and murals in Hong Kong’s Sheung Wan district. 35-35 minutes of car pollution can supply enough carbon to fill one Air Ink Pen

PP - 18

Studies on Antimicrobial Potential of CYANO Embedded Benzimidazole Derivatives

Deepkumar Joshi[1], Rajesh Narigara[1] and Gaurang Jani[2]

[1]Chemistry dept., Sheth M. N. Science College, Patan-384265, Gujarat, India,

[2] Shri U.P.Arts, Smt. M.G. PanchalScience & Shri V.L.Shah Commerce College, Pilvai-382850, Gujarat, India
Email ID: deepkumarsjoshi@yahoo.com

Abstract

The titles work describes the synthesis of benzimidazole derivatives via basic chemical reactions leading to the formation of potential antibacterial and antifungal derivatives. The formed compounds were confirmed using various analytical spectral techniques viz. IR, ^{1}H- NMR and mass spectra. The synthesized compounds were screened for their antimicrobial potential against various strains of gram positive and gram negative bacteria along with few strains of fungi. The obtained values of the antibacterial and antifungal potential were reported in the form of Minimum Inhibitory Concentration as well as Zone of Inhibition.

RKUNIVERSITY

PP - 19

Non-toxic Complexing Agent Triethanolamine as Green Route to Synthesis ZnS Thin Films by Chemical Bath Deposition Method

R. P. Khatri[1] and A. J. Patel[2]

[1] Gujarat Technological University, Chandkheda, Ahmedabad-382424, Gujarat, India
[2] Government Engineering College, Godhra, Panchmahal-389001, Gujarat, India
Email ID: rajukhatri_222@yahoo.co.in

Abstract

In present work, uniform and well-adherent ZnS thin films were tried to deposit using low cost CBD method. In this method, Zinc acetate dihydrate, thiourea, triethanolamine (TEA) and ammonia were used as precursor. As-grown ZnS thin films were annealed at 350 °C for 1 hr under air atmosphere before characterization. The annealed ZnS thin films were characterized by XRD, energy dispersive X-ray analysis (EDAX), scanning electron microscopy (SEM) and optical UV/VIS/NIR transmission spectra. X-ray diffraction confirmed polycrystalline hexagonal phase of ZnS having preferential orientation along (0 0 10) planes. SEM images showed flower like morphology for growth mechanism of ZnS thin films. EDAX spectra reveals S/Zn ratio 0.66 which indicate Zn rich composition. Optical spectra showed 50% transmittance of ZnS thin films with energy bandgap 3.50 eV. This result shows wide applicability of ZnS thin films in field of optoelectronics.

PP - 20

Synthesis and Biological Screening of (*17e*)-*n*-((2-(4-fluorophenyl)-6-methyl*h*-imidazo [1,2-α]pyridin-3-yl]methylene)-4-arylamines.

K.A. Joshi and B.V. Trivedi

Shree D K V Arts & Science College, Jamnagar, Gujarat, India
Email ID: bhaktitrivedi2605@gmail.com

Abstract

The constitution of newly synthesized compounds have been supported by using elemental analysis, infrared spectroscopy, ^{1}H NMR & ^{13}C NMR spectroscopy and further supported by mass spectrometry. Purity of all the compounds has been checked by thin layer chromatography. Looking to the interesting properties of azomethines, with an intension to synthesizing better therapeutic agents. Azomethine derivatives have been synthesized by the condensation of 2-(4-Fluorophenyl)-6-methyl*H*-imidazo[1,2-α]pyridine-3-carbaldehyde with different aromatic amines in order to study their biodynamic behavior.

RKUNIVERSITY

PP - 21

Synthesis, Characterization and Biological Evaluation of Ethyl-4'-(Cyclopropane carboxamido-N-yl)-5-ary-3-oxo-3,4,5,6-tetrahydro-biphenyl-4-carboxylate

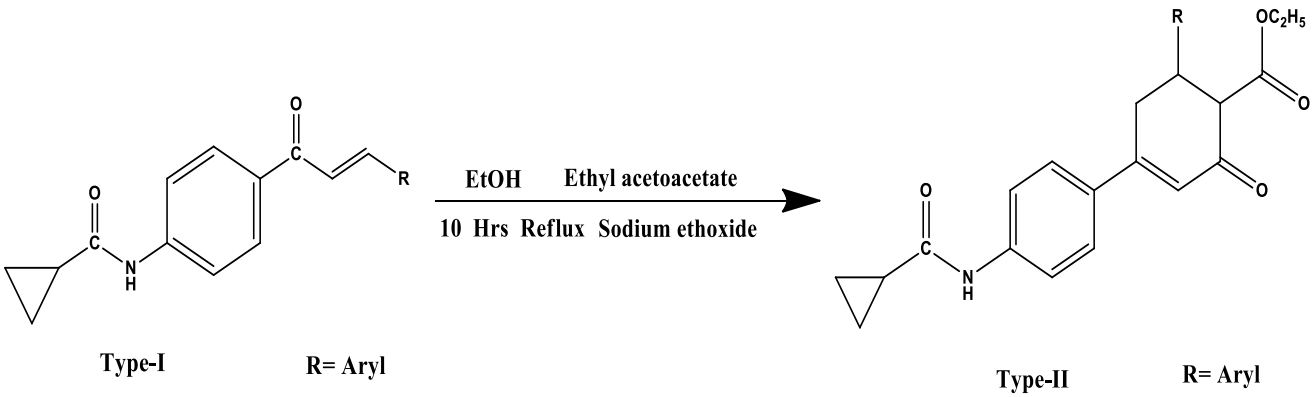
Pankaj M. Akbari and Viral R. Shah

Department of Chemistry, Kamani Science College and Prataprai Arts College, Amreli-365601, Gujarat, India

Email ID: pankaj123akbari@gmail.com

Abstract

A series of new substituted cyclohexenone derivatives have been synthesized by the reaction of various substituted chalcones with ethylacetoacetate. Some new N-(4-(3-Aryl-acryloyl) phenyl)cyclopropane carboxamidewere prepared by Claisen-Schmidt condensation method in presence of sodium hydroxide in ethanol solvent under stirring.The synthesized compounds were characterized by their spectral (I.R., N.M.R., Mass) data and screened for their antimicrobial activities against gram positive and gram negative bacteria by using standard antimicrobial drugs.



RKUNIVERSITY

PP - 22

Point of Care Diagnosis: Recent Trends and Advances

Shaimhusen Khorajiya[1] and Ashish Vagadiya[2]

[1]M.sc MLT, Dept.Of Medicine, Shree A. N. Patel PG Institute of Science & Research Anand-388001, Gujarat, India,
[2]DMLT, Saurashtra Paramedical Institute Rajkot-360005, Gujarat, India.
Email ID: shaimkhorajiya@gmail.com

Abstract

Point of Care Testing (PoCT) is also known as bedside testing or alternate testing. The volume of point of care testing has steadily increase over the last 20 years since its widespread introduction. It provides the facility for testing of patient outside of laboratory using several molecular diagnostic tools. In the developing world there is the challenge of more effective care for infectious disease and PoCT may play a much greater role here in future. The advantages of faster test result available leading to more timely treatment and increase patient satisfaction. Exploring various options and methods of PoCT will results into reduce number of clinic visit, improve quality of life, intraoperative transfusion algorithms and better management of patients in a timely manner.

PP - 23

Phytochemical Evaluation and Antioxidant Activity of Selected Fruit Waste

Urvi Gupta[1] and Hitesh A. Solanki[2]

[1]Assistant Professor, Indian Institute of Teacher Education, Gandhinagar, Gujarat, India.
[2]Professor, Department of Botany, School of Sciences, Gujarat University, Ahmdabad Gujarat, India

Email ID: urvi8198@gmail.com

Abstract

Fruits and vegetables are proven rich source of important phytochemicals since long back. Present study have been carried out to evaluate the phytochemical composition of fruit peels which are generally being treated as waste. Five fruits have been selected *viz.* Mango, sweet lime, orange, watermelon and pomegranate. In determination of ash value and extractive values, watermelon peel and sweet lime peel have been reported for higher content. Qualitative analysis for sugars, proteins, fats and fixed oils, alkaloids, phenols, flavonoids, tannins, saponins, terpenoids, glycosides and steroids have been carried out in which mango peel and orange peel extracts were reported positive for higher number of phytochemicals. Results for quantitative tests showed higher concentration of total sugar in pomegranate and orange peel, reducing sugar in orange peel, protein in watermelon peel, starch in mango peel, total phenol in pomegranate peel, flavonoid in pomegranate and mango peel and tannins in sweet lime peel and pomegranate peel have been reported. Mango and Orange peel have also reported for their high antioxidant activity in comparison to other waste material.

RKUNIVERSITY

PP - 24

N-phenylpyrazole Curcumin of Curcumin as Antibacterial Agent

Satyendra Mishra and Sejal Patel

Centre for Engineering and Enterprise, Institute of Advanced Research, Koba Institutional Area Gandhinagar, 382426, Gujarat, India
Email ID: satyendramishra1@gmail.com

Abstract

Curcumin, one of the most important pharmacologically significant natural products, has achieved substantial consideration between scientists for decades since of its multi-pharmacological activities. The present work involves synthesis of pyrazoles derivative of curcumin and characterization by ^{1}H NMR and Mass spectroscopy. A few of derivatives displayed better potency than *N*-phenylpyrazole curcumin and parent molecule curcumin. The improved potencies of few derivatives portrayed here the prospect of preparing additional derivatives around '*N*-phenylpyrazole curcumin' scaffold.

PP - 25

Use of Chromium Oxides of Magnesium as Replacement for Lithium Ion Batteries for Better Efficiency

Nisarg Raval, Astha Parmar and Matin Kureshi

B. V. Shah Vadivihar Science College, C U Shah University, Wadhwan, 363001, Gujarat, India

Email ID: nisuraval.97@gmail.com

Abstract

Magnesium battery technology has been championed as a possible solution to provide longer lasting phone and electric car batteries. But finding a practical material that can be used as a cathode has been a challenge that scientists have been trying to figure out since long. One factor limiting lithium ion batteries is the anode. Low capacity carbon anodes have to be used in lithium ion batteries for safety reasons as the use of pure lithium metal can cause dangerous short-circuits and fires. In contrast, Magnesium metal anodes are much safer. So partnering magnesium metal with a functioning cathode material would make a battery smaller and store more energy.

RKUNIVERSITY

PP - 26

Pilot Scale Study in Solid Waste Management: Characterization And Utilization Of Solid Waste

Snaa Mistry, Rajashekhar I, and R Krishnamurthy

Uka Tarsadia University, C.G.Bhakta Institute of Biotechnology, Maliba Campus, Gopal Vidyanagar, Bardoli, Mahuva Road, Tarsadi, Surat-394350, Gujarat, India
Email ID: mistrysnaa@gmail.com

Abstract

In India traditionally the disposal process of solid waste has been through incineration and river dumping. Burning leads to toxic dioxin emissions, more carbon dioxide and particulate matter leading to severe air pollution and it also disrupts aquatic ecosystem, hence landfill has now become the main waste management, but due to scarcity of land and also because of various contaminants such as leachate emission has rendered landfill as no longer, a sustainable option of solid waste disposal method. The need of alternative method arises in solid waste management because of the cost of solid waste disposal, random dumpsites, unregulated medical waste , the licensing of landfill is made difficult due to environmental and political barriers that limit the choices for disposal. In this present study, initial arrangements to collect solid waste generated at our institute has been made, along with creating awareness about segregation and its disposal at respective designated points. We are designing the bins with suitable labels, so that particular waste is disposed in designated containers along with placing the bins with suitable labels. This will be followed by collection, segregation into organic and plastic waste and quantification of waste at different collection sites on daily basis. Estimation and Storage of solid waste with further utilization of organic waste for vermicomposting and preparing manure along with this using different fruit peels for making liquid fertilizers, checking its potency in Plant Tissue Culture followed by trials in green house using seeds of essential medicinal plants. Utilization of plastic waste is been done through conversion of it into essential oils. Aim of this research is effective solid waste management at institutional level with no environmental pollution.

PP – 27

Growth and Characterization of cobalt-cadmium mixed levo-tartrate crystals

N. H. Manani, H.O. Jethva and M.J. Joshi

Department of Physics, Saurashtra University, Rajkot, Gujarat, India
Email ID: hojethva@rediffmail.com

Abstract

Metal tartrate crystals find various applications. In the present study, cobalt – cadmium mixed levo tartrate crystals were grown using silica hydro-gel as growth medium. For the growth of mixed crystals, the supernatant solution containing 4 ml 1 M cobalt nitrate and 6 ml 1 M cadmium nitrate was poured on the levo tartaric acid impregnated gel. A layer of spherulitic and dark reddish colored crystals was obtained at the gel-liquid interface. The crystals were characterized by EDAX, FTIR spectroscopy and TGA. The cobalt and cadmium composition in the crystals was determined by EDAX. The FTIR spectrum revealed the presence of water molecules, O – H, C – H, C – O and C = O functional groups. The thermo-gram suggested that the crystals were thermally unstable and decomposed into oxide through a single stage.

RKUNIVERSITY

PP – 28

Synthesis, Structural and TG/ DTA (Thermal Characterization) of Cu Doped Tin Selenide NP's or Quantum Dots

N. N. Gosai[1] and G. K. Solanki[2]

[1]Department of Physics, MVM Sci. & H. Sc College, Rajkot, Gujarat, India.

[2]Department of Physics, Sardar Patel University, Vallabhvidyanagar, Gujarat, India.

Email ID: nitin_gosai86@yahoo.com

Abstract

Nanocrystalline Copper doped Tin Selenide have been prepared by aqueous solution method in double distilled water at room temperature. All the chemicals used for this were of Analytical Reagent grade and of 99.999 % purity. Structural confirmation of prepared compound and particle size estimation was done from X- ray diffractogram obtained by CuK_{α} radiation of wavelength 1.540 nm. Compositional or elemental analysis of this compound was done using energy dispersive analysis of X- rays (EDAX) and it is found that prepared compound is nearly stoichiometric in nature. Thermal characteristics of SnSeCu nanocrystals were studied employing thermoanalytical techniques, viz. TGA and DTA. Thermogravimetric analysis (TGA) has been used for many years to evaluate thermal stability of material as it will determine the range of stable operation for a device made up out of these materials under investigation. Thermal analysis experiments were carried out with constant heating rate of 10 °C/ min in air from room temperature to 900 °C. The DTA pattern of SnSeCu nanocrystal shows a strong endothermic peak at 450 °C. The objective of this study is to determine activation energy and other kinetic parameters of prepared compound. Broido and Coats- Redfern (C- R) models are used to evaluate different kinetic parameters viz. activation energy, entropy, enthalpy, Gibbs mean free energy and they were found to have good correlation coefficient.

PP – 29

Fundamental Science of Architectural Acoustics

N. N. Gosai[1] and G. K. Solanki[2]

[1]Department of Physics, MVM Sci. & H. Sc College, Rajkot, Gujarat, India.

[2]Department of Physics, Sardar Patel University, Vallabhvidyanagar, Gujarat, India

Email ID: nitin_gosai86@yahoo.com

Abstract

Necessity is mother of all invention as well as discovery. Author had explained basic science of sound energy with scientific manner. Main aim of the paper is to provide relevant scientific approach to understand acoustics rather than technology or engineering point of view. Architectural acoustic is also discussed to produce optimum sound effect in auditorium / seminar hall. Factors affecting the acoustic of building are explained. Author also suggests remedies to outcome from many practical problems regarding the designing of hall. Overall control of musical notes in different musical instruments is discussed. Fundamental understanding and physics behind the sound waves, sound energy and music is explained in depth.

RKUNIVERSITY

PP – 30

Synthesis, EDAX and XRD of Pure and Crystal violet doped KDP crystal

A. M. Dholariya[1] and K. G. Raval[2]

[1]Bhagwan Mahavir College of Science and Technology, Surat-395017, Gujarat, India
[2] Narmada College of Science and Commerce, Zadeshwar, Bharuch-392011, Gujarat, India
Email ID: ankitadholariya26293@gmail.com

Abstract

The importance of nonlinear optical crystals are because of their application in the area of telecommunication, optical information process, frequency conversion and optical data storage. Potassium dihydrogen orthophosphate (KH_2PO_4) is a well-known nonlinear optical material. The potassium dihydrogen orthophosphate (KDP) pure single crystals and doped with crystal violet dye, were successfully grown by slow evaporation method at room temperature with deionized water as a solvent with intention of improving some of the properties of KDP crystal. There were two variation in the concentration of crystal violet dye in KDP solution viz 0.1mol% and 0.2mol%. The grown single crystals have been analyzed with Energy Dispersive X- ray analysis (EDAX) and X-Ray diffraction. The structural properties of EDAX indicates the inclusion of crystal violet dye in KDP crystal. The XRD analysis shows the changes in lattice parameter in pure KDP crystal and crystal violet doped KDP crystal.

PP – 31

Synthesis and Antimicrobial Screening of 2-Hydroxyacetophenone Based Chalcones

Sejal Thumar and Bhargav Deshani

School of Science, RK University, Rajkot 360020, Gujarat, India
Email ID: bmdeshani@gmail.com

Abstract

A series of chalcones have been synthesized by Crossed-Aldol condensation of 2-Hydroxyacetophenone and various substituted aromatic aldehydes. The purities of these chalcones have been checked by their physical constants and Mass spectral data. The reaction was monitored by Thin layer Chromatography (TLC). The anti-microbial activities of these chalcones have been evaluated using Agar well diffusion method.

RKUNIVERSITY

PP – 32

Isolation and Characterization of Heterotrophus from Biogas Slurry

Priyanka Prajapati A[1], Noopur Goyal R[2] and Minal Trivedi [3]

[1]Department of Biotechnology Pacific University, Udaipur, Rajasthan, India
[2] M.G. Science Institute, Ahmedabad, [3] HVHP Institute of P.G. studies and research, KSV, Kadi, Gujarat, India
Email ID: priyankammistry04@gmail.com

Abstract

Biogas is a mixture of methane and carbon dioxide produced by anaerobic degradation of organic matter and used as a fuel. In the current study the physicochemical, morphological characteristics, biochemical characteristics and 16S rRNA sequencing of slurry has been studied. The pH of the samples were in range of 7 to 9; BOD varried from 197 to 3950 mg/l; COD was a range from 692 to 15462 mg/l. chlorine was found in range from 0.260 to 0.700 mg/l while heavy metal like copper was in range of 1149 to 3948 mg/l. Total viable counts of the samples were in a range from $8.5*10^4$ to $1.35*10^6$. The sugar and protein were ranging from 0.645 to 0.835 mg/ml and 0.036 to 0.666 mg/ml respectively. Different isolates of bacteria were isolated using Nutrient agar medium, Sabourd's medium and Glucose yeast extract medium. Biochemical test like Indole test, Methyl red, Vogas Prokauer and Citrate utilization test etc have been done. Organism like *Pseudomonas aeruginosa, Staphylococcus succinus, Nocardiopsis terrer and Aspergillus tubingensis* etc were isolated from the slurry samples. The bacterial isolates were preliminarily examined by morphological characteristics and they were further confirmed by 16S rRNA sequencing and analyzed through BLAST.

PP - 33

Formulation and Evaluation of apsule Containing Immediate Release Granules and Sustained release Beads of Domperidone

Dixita Limbasiya and Ketan V. Shah

School of Pharmacy, RK University, Rajkot-360020, Gujarat, India
Email ID: dlimbasiya880@rku.ac.in

Abstract

Todate, only immediate and sustained release tablets of domperidone are available in the market, so our aim was to formulate and evaluate capsule containing immediate release granules and sustained release beads of domperidone. Immediate release granules of 10 mg domperidone/150mg granules were prepared from lactose and sustained release floating beads of 20 mg domperidone/200 mg beads were prepared from sodium alginate using calcium carbonate as a gas foaming agent. Prepared beads and granules were evaluated using bulk density, tapped density, Carr's index, Hauser ratio and angle of repose. Floating lag time and floating time of sustained release floating beads of domperidone were also evaluated. Batch containing 10 % acacia solution was considered as an optimized batch. Bulk density, tapped density, Carr's index, Hauser ratio, and angle of repose of this batch were 0.54 g/mL, 0.68 g/mL, 22, 1.24, and 25.86 respectively. A batch containing 500 mg sodium alginate, 300 mg calcium carbonate, 20 mg domperidone was selected for sustained release floating beads. Floating lag time of this batch was found to be 68 seconds and floating time was found to be more than 12 h. Capsule containing immediate release granules and sustained release floating beads of domperidone may provide good patient compliance with reduced dosing frequency and faster onset of action. This formulation can be useful in nausea and vomiting.

RKUNIVERSITY

PP – 34

Synthesis and Antimicrobial Screening of Azetidinones from Schiff Bases

Neha Bhalara, Janki Chhatrala, Milap Borisagar and Twinshi Dadhaniya

School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: mborisagar025@rku.ac.in

Abstract

On noting the wide range of biological and industrial applications of azetidinones and Schiff bases two series of Schiff bases and their corresponding azetidinone complexes were prepared using green and conventional methods. The synthesized compounds were screened for possible antimicrobial activity against *S. aureus* and *E. coli*. The Schiff base SB3 was found to be effective against *S. aureus*, whereas the Schiff base SBA3 was found to be effective against both *E. coli* and *S. aureus*. The azetidinone SBA3R was found to be effective against *S. aureus*. The activity of azetidinones against *E. coli* was observed to be lower than their Schiff bases. The reaction was monitored by TLC and the compounds were characterized by GC MS.

PP – 35

Antibiotic Resistance Understanding and Overcoming

Jatin Zapada, Radha Kundaliya, Rutvik Chauhan and Mansi Sagpariya

Department of Microbiology, Marwadi Uiversity, Rajkot, Gujarat, India
Email ID: zapadajatin@gmail.com

Abstract

Antibiotic drugs have revolutionized medicine and made our modern way of life possible in addition to their essential role in clinic, antibiotic is used in a huge array of non-medical application, from promoting growth in livestock, to preserving cultures from contamination. However, overuse threatens their efficacy due to the promotion and spread of antibiotic resistance. They target and inhibit essential cellular processes, retarding growth and causes cell death. However, if bacteria are exposed to drugs below the dose required to kill all bacteria in a population (minimum bactericidal concentration or MBC) they can resist antibiotic treatment via natural selection for resistance – conferring mutation. Given the importance of antibiotic to modern medicine, and the growing apprehension surrounding threat of resistance, scientists are studying every aspect of antibiotic resistance. This poster focuses on three main parameters- cellular mechanism of resistance, the evolution and spread of resistance, and techniques for combating resistance.

RKUNIVERSITY

PP – 36

Synthesis, Characterization and Activity of Schiff Base Cu (II) and Fe (III) Complexes

Chandresh Jayantibhai Bhimani, Chirag Nathani and Boruah Jeena Jyoti

Department of Chemistry, School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: cbhimani583@rku.ac.in

Abstract

Two Schiff Base complexes of Iron (III) and Copper (II) were successfully synthesized. The used Schiff Bases were derived from the condensation of 3-nitrobenzaldehyde or salicylaldehyde and *o*-phenylene diamine. Each of the compounds were characterized by elemental analysis, FTIR and ^{1}H NMR spectroscopy. The catalytic and anti-microbial activity of the complexes were also studied. In catalytic studies, both complexes efficently oxidized organic sulfides into sulfoxides or sulfones. The complexes showed good anti-bacterial activity towards *B. subtilis*, *E. coli and S. aureus*.

PP - 37

Isolation of detergent degrading bacteria from *Sapindus mukorossi*

Dixit Rupareliya and Sougata Ghosh

Department of Microbiology, School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: dixitrupareliya100@gmail.com

Abstract

Chemical detergents and surfactants released in the water bodies poses a threat to both aquatic life and the crops.Herein we report the isolation and characterization of detergent degrading bacteria from *Sapindus mukorossi* pericarp extract.Bacteria were isolated from *S. mukorossi* by enrichment and further streaking for isolation which were characterized and evaluated for detergent degrading potential against four commercially available detergents namely, Surf Excel, Tide Plus, Ariel and Rin. Appropriate control experiment was set up using sodium dodecyl sulphate (SDS). Degradation of detergent was estimated quantitatively in terms of emulsification index against engine oil, coconut oil, groundnut oil and mustard oil.Among the cultures, DD5 (*Bacillus* sp) culture showed efficient detergent degrading activity on incubation in minimal medium supplemented with 4 detergents. The emulsification index of Surf Excel was reduced to 32 from 40 while for Tide the reduction was seen from 36 to 28 by DD5. DD1 reduced emulsification index of Tide Plus from 36 to 24. Visible colour change, turbidity and reduction in frothing confirmed the efficiency of the isolated cultures to degrade commercial detergents. Further optimization of the parameters will help to design low cost, rapid water treatment process beneficial to agriculture and helpful to address detergent mediated water pollution.

RKUNIVERSITY

PP – 38

Synthesis of Schiff base Iron (III) Complexes and Their Applications

Zankhana Shaileshkumar Bhatt, Vaishaliben Jayantibhai Bambhaniya and Jeena Jyoti Boruah

Department of Chemistry, School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: zbhatt733@rku.ac.in

Abstract

The Iron (III) Schiff Base complexes were synthesized by reacting the pre-formed ligand with $FeCl_3$. The ligands (Schiff Bases) were synthesized by reacting 3-chlorobenzaldehyde or salicylaldehyde and *o*-phenylene diamine. The reactions were clean and achieved complete conversions. The compounds were well characterized by elemental analysis, FTIR and ^1H NMR spectroscopy. The activity of the complexes was studied towards catalytic oxidation of organic sulfides and anti-microbial activity. In presence of H_2O_2as oxidant, both the complexes effectively oxidized sulfides into sulfoxides or sulfones. The complexes also showed anti-bacterial activity towards different bacterial strains viz. *Bacillus subtilis, Escherichia coli and Staphylococcus aureus.*

PP – 39

Evaluation of Immunostimulant Action of Prickly Pear Fruit Juice *In-vitro*

Darshan Ghunchala, Jinal Adhiy and Tejas Ganatra

[1]School of Pharmacy, RK University, Rajkot-360020, Gujarat, India
Email ID: adhiyajinal@gmail.com

Abstract

Immune system is the main defense mechanism of our body. Strengthening of the immune system is nowadays the major research target of the researchers, as there is a dire need of new safe, economical immune stimulant which is readily available to the common people. Currently, the plant Prickly Pear is reported to possess Immuno-Stimulant activity due to its phytochemicals. Evaluation of Immuno-Stimulant Action of Prickly Pear Fruit Juice *In-vitro* The Prickly pear fruits are collected from local market of Tramba (Gujarat-India). The seed free juice of the fruits prepared and Immunostimulant action of prickly pear is evaluated using *In-vitro* Phagocytosis test. Confirmation of immuno-stimulant action of prickly pear is done using nitro blue tetrazolium dye test. Anti-oxidant and free radical scavenging potential of prickly pear perusing DPPH and H_2O_2 test. And Statistical analysis is performed. The results of Phagocytic activity data indicate were significantly different when compared with control and level of significance which was $P>0.001$. As per DPPH model, indicate that result data were significantly different when compared with control and level of significance which was $P>0.001$. H_2O_2 model indicate that data were significantly different when compared with control and level of significance which was $P>0.001$. Thus, Immunostimulant and free radical scavenging activity were confirmed. According to the obtained results, we can conclude that prickly pear possesses strong immune-stimulant potential as well as better free radical scavenging potential.

RKUNIVERSITY

PP – 40

Photocatalytic Degradation of Organic Dyes: Green Nanotechnology

Shruti Raiyani, Hetvi Kanojia, Sejal Shah and Bhavika Turakhia

Department of Microbiology, School of Science, R K University, Rajkot-360020, Gujarat, India
Email ID: bhavika.waghela@rku.ac.in

Abstract

The level of pollution is increasing day by day. One of them is water pollution. Reason for water pollution is effluent disposal of textile industries, which can harm aquatic ecosystem and animals. To decrease the water pollution there is a need to develop more effective method for effluent treatment. To solve the problem we describe use of green synthesis of Zinc nanoparticles (ZnNPs) for degradation of various hazardous dyes such as methylene blue, congo red, malachite green, and methyl orange. Nanoparticles were synthesized using *Carica papaya* leaf extract. 0.01M zinc acetate was used as precursor for the synthesis of ZnNPs. The synthesized nanoparticles have been primarily characterized by color change from colorless to yellow and by UV- visible spectroscopy, Forurier-transform Infrared Spectroscopy (FT-IR), etc. The photocatalytic activity of the synthesized zinc nanoparticle was examined by degradation of various dye under sunlight. 92% phtocatalytic degradation of malachite green dye under sunlight irradiation was observed at 48 h of exposure time.

PP – 41

In silico and *in vitro* Studies of Fluorinated Chroman-2-carboxilic acid Derivatives as an Anti-tubercular Agent

Shyam Padariya, Bhavisha Vadodariya, Janki Kalariya, Riya Makawana and Khushal Kapadiya

School of Science Department of Chemistry, RK University, Rajkot, Gujarat, India
Email ID: khushal.kapadiya@rku.ac.in

Abstract

Despite the use of traditional method, Ugi reaction currently is a well-established multicomponent reaction. Chromane motif itself possesses a variety of biological functions. In order to improve its anti-tubercular activity, it is necessary to modify it accordingly.To ensure relation between *in silico* and *in vitro* study, we have carried out *in vitro* screening against H37Rv anti-tubercular agent. Here we performed Ugi four-component condensation (U-4CCRs) between 6-fluorochroman-2-carboxylic acid, various aryl aldehyde, 3,4,5-trimethoxy amine and *tert*-butyl isocyanide, gave *N*-((*tert*-butylcarbamoyl)(4-substitutedphenyl)methyl)-6-fluoro-*N*-(3,4,5-trimethoxyphenyl) chroman-2-carboxamide.The molecular level insight of all compounds was carried out by molecular docking study against the receptor tyrosine phosphatase PtpB. All these newly synthesized compounds were screened for their anti-microbial activity against *Mycobacterium tuberculosis* H37Rv to determine the MIC, IC_{50} and IC_{90} of the compound. The compound **5d** also shows large hydrophobic surface contact on the face of the α7–α8 (Ile 207, Phe 211, Met 206, Ile203, Phe161, Phe80, Met126, Tyr130, Val231 and Leu101) that lines one side of the entrance to the active site of the receptor. The compound **5d**bind with tyrosine phosphatase PtpB with predicted docking geometric score of 4664, whereas a score of rifampicin was 6586 determined. From the docking studies, compound **5d**,was considered to be the potent inhibitor, which gave strong supportive coordinate with the *in vitro* study. It is highly active against H37Rv, having MIC and IC_{50} value of was 70 µM and 53 µM respectively in *in vitro* study.

RKUNIVERSITY

PP - 42

Etoposide Drug

Shakib Bhoraniya, Svati Viradiya, Dhruvi Rasadiya and Payal Meshiya

School of science, RK University, Rajkot-360020, Gujarat, India
Email ID: shakibbhoraniya486@gmail.com

Abstract

Frist synthesized in 1966 by Hartmann F. stahelin he is Swiss pharmacologist and US Food and drug approval was granted in 1983. Etoposide is an anti-tumor agent.it is use for the treatment of the small cell, lung cancer, testicular cancer, etc. Etoposide has limited neoplastic activity and against several solid tumor and no of small cell of lung cancer cross resistance to MDR tumor cell liver & low bio availability.

PP – 43

Synergistic Prospective of Iron Nanoparticles in Combination with Antimicrobial Agent

Nayan Parmar, Jalpa Jesadiya, Sougata Ghosh, Bhavika Turakhia and Sejal Shah

Department of Microbiology, School of Science, R K University, Rajkot-360020, Gujarat, India
Email ID: bhavika.waghela@rku.ac.in

Abstract

Development of green synthesis of nanoparticals is an important aspect of current nanotechnology research. Plant extract has an antimicrobial activity due to the presence of different phytochemicals. In the current study, we reported the synthesis, bactericidal and synergistic effect of iron nanoparticles in combination with antimicrobial agent via green chemistry. Phytochemicals present in the solution is responsible for the reduction of metal ions has been analyzed by Gas Chromatoghraphy Mass Spectroscopy (GC-MS). Further synthesized nanoparticles were characterized by UV-Visible spectrometry, Fourier Transform Infrared Spectroscopy (FTIR), etc.Novel synergistic effect were seen when FeNPs used in combination with antibiotics. Iron nanoparticles can be utilize as an advance nanomedicine in order to fight against polyresistant bacteria.

RKUNIVERSITY

PP – 44

Multicellular Tumor Spheroids (Mcts) and It's Role In Cancer Biology

Pranav Pandya, Maitri Nandasana, Priya Mori and Sejal Shah

[1]Department of Microbiology, School of Science, RK University, Rajkot, Gujarat, India
Email ID: ppandya035@rku.ac.in

Abstract

Cells proliferates in the pattern of mitosis or meiosis according to their role andtype of germination. The error in the division pattern leads to the abundant and uncontrolled growth of cells commonly known as cancer. Normally, the cells in human body grows in the organized 3-D matrix surrounded by the other cells.The experiments performed earlier on the cells are basically 2-D based so, various interactions such as cell differentiation, apoptosis, proliferation or invasion were not known. Therefore 3-D culture technique came into existence and it is widely used in anticancer drug discovery as it provides 3-D structures of tumor cells and information of microenvironment required for their growth and study. The spherical cell aggregates called spheroids which are formed from the tumor cells are grown in the invitro conditions. Spheroids are mimic of the original tumor cells and possess similar structure as of the tumor cell. The similarities between original tumor and the spheroids includes volume growth kinetics and cellular heterogeneity. The immunological studies of spheroids results in characterization of defense cells which are responsible for host versus tumor interactions. Spheroids aids new insights to the tumor biology and the effect of anticancer drugs along with their site of interaction with the tumor. The study of spheroids helps to solve various hypothesis as well as the reason of regeneration of tumor after chemotherapy. Spheroids are the key models to reach the roots of cancer and to solve unknown problems in the future in the field of tumor biology. It may help to fill the gap of in-vivo and in-vitro environment of the tumor.

PP - 45

Agricultural microbiology

Priya Adesara, Jadeja Binaliba, Daxini Janvi, Sondagar Urvashi and Sheth Juhi

M V M Science and Home science College, Rajkot, Gujarat, India
Email ID: shethjuhi93@gmail.com

Abstract

Agricultural microbiology is a field of study related with plant associated microbes. It aims to address problems in agricultural practise usually caused by a lack and biodiversity in microbial communities. The agricultural applications is useful in the enhancement of factors such as soil nutrients, plant - pathogen resistance, fertilization uptake efficiency and more many symbiotic relationship between plants and microbes which greatly help for greater food production. In addition to safer farming techniques for the sake of minimizing ecological disruption, some strains of free living bacteria, actinomycetes, fungi and protozoa have also evolved with variety and plant to produce symbiotic relationship. Many species such as AMF, PGPR are helpful as the human population increases day by day, land decreases in order to produce sufficient food products. Microbial inoculants are one of the way in which food production efficiency can be improved with the help of these microbes. They minimize the harmful ecological effects. The aim of agricultural microbiology is to minimize the use of fertilizers and increase the productivity of food in lesser area.

RKUNIVERSITY

PP - 46

Food Preservation
Traditional technique v/s Modern technique

Avani Ghoghari, Kachhadiya Kajal, Bharadva Jignasa, Sangani Suhani and Sheth Juhi

M V M Science & Home science College, Rajkot, Gujarat, India
Email ID: shethjuhi93@gmail.com

Abstract

Food preservation is the process of treating and handling food to stop or slow down food spoilage, loss of food quality, edibility or nutritional value and thus allow for longer food storage. Food preservation may also include process that inhibits visual deterioration, such as the enzymatic browning reactions. The main aspect of food preservation is maintaining and creating nutrient value, consistency and flavor. Mainly two techniques are used for preservation of food. (1)Traditional techniques and (2) Modern industrial techniques. Traditional techniques involves a) Curing with salt- Salt accelerates the drying process using osmosis and also inhibits the growth of several common strains of bacteria.(2) Cooling (3) Freezing (4) Boiling (5) Heating (6)Sugaring (7)Pickling (8)Sodium hydroxide (9)Canning (10)Fermentation (11) Jellying (12) Burial. Other modern techniques involve (1) Pasteurization (2) Vaccum packing. (3) Freezing and Drying (4) Irradiation (5) Pulsed electric field electroporation (6) Modified atmosphere. Bio preservation is recently emerging technique which is used widely. It is the use of natural or controlled microbiota and antimicrobials as a way of preserving food and extending its shelf life. Also use of combination of intelligent Hurdles is been defined as Hurdle technology which ensures that pathogens in food product can be eliminated and controlled by combining more than one approach. Various biopreservatives are also widely used for preservation. In these atomic era and fast growing life style of people, using various preservative techniques help in managing the foodstuff and its quality by providing less labors in hectic life style of individuals.

RKUNIVERSITY

PP - 47

Milk Microbiology

Sunera R. Ajmeri and Priyanka J. Zala

M V M science & Home science College, Rajkot, Gujarat, India
Email ID: shethjuhi93@gmail.com

Abstract

Milk is nutrient rich, white liquid fluid produced by mammary glands of mammals. It is an emulsion or colloid of butterfat globules that has carbohydrates, protein and minerals. Its pH ranges from 6.4 to 6.8. Throughout the world, there are more than 6 billion consumers of milk products. Milk contains 30-35 grams of protein per liter of which about 80% is arranged in casein micelles. Milk contains different carbohydrate including lactose, glucose, galactose and other oligosaccharides. Milk contains calcium, phosphate, magnesium, sodium, potassium, citrate and chloride. Various types of vitamins like A, B6, B12, C, D, K, E, thiamine, niacin, biotin, riboflavin are found. Milk supports the growth of variety of bacteria including pathogenic one. Spoilage is a term to describe the deterioration of foods texture. Gas forming bacteria such as *coliforms* bacteria *Cl. peifringens*, *Cl. butyricum* are commonly found which produce acid and gas. There is a risk of pathogen contamination in milk produced from healthy cows under sanitary milk conditions, pasteurization of milk prior to consumption will destroy pathogens and provide protection for illness associated with consumption of dangerous microbes. The microbial quality of raw milk is crucial for the production of quality dairy food. Occasionally, human illness has been linked to pasteurized milk products but these cases usually have been a result of contamination of the product after pasteurization or improper pasteurization. If moulds developed in milk products, it produces myco toxin which can be health hazard. Various methods are employed to overcome milk contaminants which help in growing of milk and dairy products industries without hindrance.

RKUNIVERSITY

PP - 48

Fungi: Pathogenecity, Diagnosis, Treatment and Prevention

Bhumika Suchak

M V M Science and Home science College, Rajkot, Gujarat, India
Email ID: shethjuhi93@gmail.com

Abstract

The English word Fungus is directly adopted from the Latin Fungus. It is derived from the Greek word sphongos which refers to the macroscopic structures and morphology of mushrooms and molds. A Fungus is any member of the group of Eukaryotic organism that includes microorganisms such as yeasts and molds, as well as the more familiar mushrooms. These organisms are classified as a Kingdom Fungi, which is separate from the other Eukaryotic life kingdoms of plants and animals. A characteristic that places Fungi in a different Kingdom from plants, bacteria and some protists is Chitin in their cell walls. Fungus was firstly found by James Edward Smith and term Fungi as plant class was given by Linnaeus. In its evolution DNA evidence suggests that almost all fungi have a single common ancestor. The earliest fungi may have evolved about 600 million years ago or even earlier. They were probably aquatic organisms with a flagellum. As it has more variety in appearance and characteristics, it becomes more important to study about its disadvantages and diseases caused by several types of Fungi. Fungal infection is the infection that is caused by any kind of fungi and that occurs where more amount of moisture is seen in any body part. It can affect at cutaneous level or at sub-cutaneous level and some are systemic fungi while some are opportunistic fungi. Its diagnosis is the easy part to be done, as it includes Skin rashes, unusual itching, loss of skin colour, small bump, etc., but it becomes more important to cure such easy but complicated diseases and its treatment includes Anti-Fungal Medications which takes time to cure. So it is more preferable to prevent these diseases and in precautions balancing moisture in the body parts becomes more vital.

PP - 49

Probiotics in Routine Life

Pooja Joshi

M V M Science and Home science College, Rajkot, Gujarat, India
Email ID: shethjuhi93@gmail.com

Abstract

Microorganisms that are believed to provide health benefits when consumed. Live microorganisms administered in adequate amounts which confer a beneficial health effect on the host. The term Probiotic is currently used to name ingested microorganisms associated with benefit for human and animals. Probiotic bacteria exert their effect by colonizing surfaces, such as found in the intestinal tract or the vagina.There are four different mechanisms under research by which Probiotics defends against pathogens. The researcher suggests that relationship between gut flora and human is mutualistic relationship. There are numerous benefits of consumption of Probiotics. It prevent allergies, antibiotic associated bacteria ,bacterial vaginosis, B.P, central nervous system function, cholesterol, diarrhea, eczma, Immune function and various infections. Most common bacteria are *Lactobacillus or Bifidobacterium.* These bacteria are responsible for the production of desired Probiotics. The sources are yogurt, cheese, fortified milk, juices and microalgae. In present age, there has occurred a vast need for the substitutes for various adultered food and dairy products and probiotics efficiently serve these purpose as they are having multiple health benefits.

RKUNIVERSITY

PP - 50

Vaccines: Conventional and Modern Approaches

Nikita Rathod, Neha Rathod, Mansi Goswami, Ayushi Gosai and Juhi Sheth

M V M Science and Home science College, Rajkot, Gujarat, India.
Email ID: shethjuhi93@gmail.com

Abstract

A vaccine is a biological preparation that provides active acquired immunity to a particular disease. A vaccine typically contains an agent that resembles a disease-causing microorganism and is often made from weakened or attenuated of the microbe, its toxins, or one of its surface proteins. The agent stimulates the body's immune system to recognize the agent as a threat, destroy it, and to further recognize and destroy any of the microorganisms associated with that agent that it may encounter in the future. Vaccines can be prophylactic or therapeutic. The terms *vaccine* and *vaccination* are derived from *Variolae vaccinae* (smallpox of the cow), the term devised by Edward Jenner to denote cowpox. Louis Pasteur gave the term vaccine for the first time. The effectiveness or performance of the vaccine is dependent on a number of factors like: the disease itself, the strain of vaccine, whether the vaccination schedule has been properly observed and assorted factors such as ethnicity, age, or genetic predisposition. These all are the factors which represents the conventional approaches, modern approaches include the development of Therapeutic vaccines, recombinant or genetically engineered vaccines which are based either on the expressions of the relevant protective antigen and its formulation into vaccine, or the production of live vaccine, where an appropriate live vector(virus or bacterium) presents the foreign antigen. These approaches, may be applied long term infections, or for non-infectious disease including autoimmune disease, various neurological disorders, allergy and cancer. The conventional or currently available vaccines, though are quite successful, suffer from a few shortcomings which hamper future vaccine development.

PP - 51

Anthrax: An Overview

Komal D. Vadaliya

M V M Science and Home science College, Rajkot, Gujarat, India
Email ID: shethjuhi93@gmail.com

Abstract

Anthrax was an uncommon disease in the western world until, 2001. When spores were maliciously mailed in the U.S, causing five deaths. But nowadays, this disease is well-known in all over the world. *Bacillus anthracis*, which causes anthrax is the principal pathogens. The spores may remain viable in soil for years. Skin, lungs, intestinal and injection are four forms of anthrax. The spores are resistant to environmental changes withstand dry heat and certain chemical disinfectants for moderate periods and persist for years in dry earth. It is primarily a zoonotic disease but humans become infected by contact with infected animals or their products. There are three types of anthrax: Cutaneous anthrax, gastrointestinal anthrax, Inhalation anthrax. Immunization is based on the classic experiments of Louis Pasteur. Detection for anthrax is chest X-ray method. Many antibiotics are also effective against anthrax in humans, but treatment must be started early. So, anthrax is an ancient disease that is rarely seen outside well defined geographical areas, except as an occasional occupational hazard of animal hide handlers. Its current importance is its potential use for bioterrorism.

RKUNIVERSITY

PP - 52

Biosensors

Chandni Vajani, Darshana Nakum, Khushaliba Solanki and Juhi Sheth

M V M Science and Home science College, Rajkot, Gujarat, India.
Email ID: shethjuhi93@gmail.com

Abstract

Biosensor is an analytical device, used for the detection of chemical substances,that combines a biological component with a physicochemical detector. The *sensitive biological element*, e.g. tissue, microorganisms, organelles, cell receptors, enzymes, antibodies, nucleic acids, etc., is a biologically derived material or biomimetic component that interacts, binds, or recognizes with the analyte under study. The biologically sensitive elements can also be created by biological engineering. The transducer or the detector element, which transforms one signal into another one, works in a physicochemical way: optical, piezoelectric, electrochemical, electrochemiluminescence etc., resulting from the interaction of the analyte with the biological element, to easily measure and quantify. The readers are usually custom-designed and manufactured to suit the different working principles of biosensors. A biosensor typically consists of a bio-recognition site, biotransducer component, and electronic system which include a signal amplifier, processor, and display. The bioreceptor is designed to interact with the specific analyte of interest to produce an effect measurable by the transducer. High selectivity for the analyte among a matrix of other chemical or biological components is a key requirement of the bioreceptor. Electrochemiluminescence (ECL) is nowadays a leading technique in biosensorsThermometric and magnetic based biosensors are rarely used. There are many potential applications of biosensors of various types. The main requirements for a biosensor approach to be valuable in terms of research and commercial applications are the identification of a target molecule, availability of a suitable biological recognition element, and the potential for disposable portable detection systems to be preferred to sensitive laboratory-based techniques in some situations, Some examples are glucose monitoring in diabetes patients, other medical health related targets, environmental applications.

RKUNIVERSITY

PP - 53

Virus: Pathogenecity, Diagnosis, Treatment and Prevention

Bhavya Nanavati, Twinkle Bhaliya, Dyuti Vyas and Mansi Solanki
M V M Science and Home science College, Rajkot, Gujarat, India.
Email ID: shethjuhi93@gmail.com

Abstract

In the entire World, biotic and abiotic components exist altogether. Virus is one of the microorganisms which act as bridge between living and non living organisms. Idea of this kind of microbe's existence was started by Louis Pasteur, as he was unable to find a causative agent for RABIS and speculated about a pathogen which is too small to be detected using microscope. Then many scientists came and worked upon this extra minute particle, but German Engineers Ernst Ruska and Max Knoll made study of Virus easy by inventing Electron Microscope, and in 1931 first image of Virus was obtained. Then it became easy to study about various types of Viruses. A Virus is small infectious agent that replicates only inside the living cells of other organisms and can infect all other life forms, from animals and plants to microorganisms, including bacteria and archaea. It has been centre of attraction for almost all of the workers because of its simple structure and complex functionality. A Viral disease occurs when an organism body is invaded by pathogenic viruses and infectious virus particles (VIRIONS) attach to and enter susceptible cells. Viral diseases are extremely widespread infections caused by Viruses. Here it is described small portion of information about few Viruses about their Pathogenecity, diagnosis, Treatment and most importantly Precautions against Viral Infections.

PP - 54

Use of Agrowaste as Media Component for Isolation of Multienzyme Producing Bacteria

Juhi P. Sheth, and Jigna H. Patel
M V M Science and Home science College, Rajkot, Gujarat, India.
Email ID: shethjuhi93@gmail.com

Abstract

India is the main ground for farmers. Most of the Indian economy is generated through agriculture, crop growing and farming. Large amount of waste is generated along with the enormous production of crops and farming practices termed as agro waste or agricultural refuse. To deal with this waste and its management is greater concern these days. If we use these waste as a source of energy or as a media component we can obtain multiple benefits from it along with the solving of problem of dumping or re-treating of the refused produced. Enzymes are the biological catalysts. Agrowastes like sugarcane bagasse, corn peel, corn cob etc. were used as media components for multienzyme producing bacteria. These can be used as an alternative for commercially available starch, casein, cellulose, gelatin, pectin, xylan for production of their respective enzymes. Isolation of multienzyme producing bacteria was done from the corn peel and sugarcane bagasse which were used as media component for the production of various enzymes. With the use of these cost effective substrates for production of multi enzyme is a process which will ultimately lower the cost of screening, isolation and production and is also ecological as waste products can be utilized making earth more greener place to live in.

RKUNIVERSITY

PP - 55

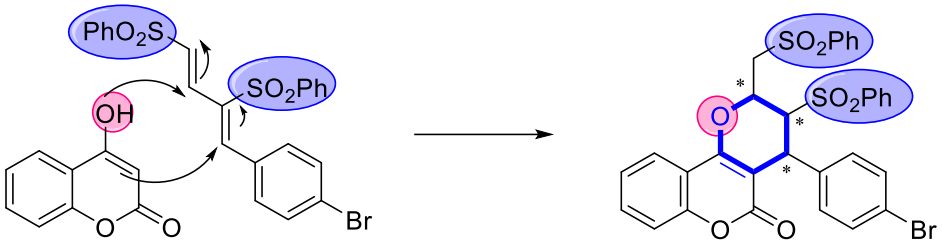
Pyrano-Coumarin Derivative Synthesis via 1,6-Conjugate Addition of 4-Hydroxycoumarin to Dienic Sulfones

Kaushik Joshi and Anil K. Mahida

Department of Chemistry, D.K.V. Arts and Science College, Jamnagar-361006, Gujarat, India
Email ID: anilmahida1@gmail.com

Abstract

An efficient demonstration a 1,6-addition and 1,4- addition in 1,3-bis- (sulfonyl) butadienes with 4-hydroxy coumarin. By appropriately designing a Michael acceptor, unique reactivities were obtained for the formation of highly valuable pyrano-coumarin derivative containing two versatile sulfones. The product were obtained in good to excellent chemical yields



RKUNIVERSITY

PP - 56

Comparative Metagenomics and Draft Genome Extraction Study From Amlakhadi Metagenomes

Poonam Saini

Department of Biosciences, Veer Narmad South Gujarat University, Surat, 395007, Gujarat, India
Email ID: sainipoonam304@gmail.com

Abstract

For generations, villagers sang "O Amla, your water is nectar, O life-giving one, I salute you" in praise of their river, Amlakhadi, in Bharuch District, Western India. Now the Amlakhadi is foul-smelling and poisoned by tonnes of industrial waste from 800 factories in the Ankleshwar Industrial Estate, part of the "Golden Corridor" of industries being pushed by the Gujarat government under its Vision 2010 development plan. Amlakhadi canal, flowing through Ankleshwar (Gujarat, India) has been impinged with various xenobiotic compounds, released in industrial discharges, over last many decades. Farmers in the area lament that the effluents from dyes, pesticides, fertilizers and petrochemical plants are turning their fertile fields of cotton, sugarcane, maize, groundnuts, banana and lentil into wasteland. According to an annual research conducted by Blacksmith Institute in 2008, four sites from Gujarat figure in South Asia's 66 most-polluted sites. In present work comparative metagenomics study of five metagenome done both community level and functional level. Comparative metagenome analysis was done with recent Nanopore based sequencing done by Veer Narmad South Gujarat University against four metagenome sequence generated with ion torrent platform deposited in EBI (ERR947518, ERR947519, ERR947520, ERR947521) by Sardar Patel University, Gujarat India in 2013. The comparative analysis suggests the presence of the four dominant bacterial phyla Proteobacteria, Bacteroidetes, Firmicutes and Spirochaetes. Whereas, *Euryarchaeota* was abundant *Archaea. Sulfuricurvum, Bacteroidales, Mesotoga* and *Allochromatium* are the common genera detected in the metagenome. Core and rare microbiome suggest the richness and uniqueness of the site. The detection of various xenobiotic degrader species suggest the impending application of the microbial consortia for the bioremediation of the xenobiotic contaminated sites. Function analysis also revealed the presence of various genes operated in xenobiotic compound degradation. Besides that from the recent metagenome draft genome and annotation of *Pseudomonas spp.* was also carried out.

RKUNIVERSITY

PP - 57

Antimicrobial Resistance in Bacteria if Animal Origin

Deepa D. Sharma

Department of Biosciences, VNSGU, Surat, Gujarat, India.
Email ID: deepasharma10995@gmail.com

Abstract

Antimicrobial resistance is the ability of microbes to grow in the presence of a chemical or drug that would normally kill them or limit their growth.New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases, resulting in prolonged illness, disability, and death. Antimicrobial resistance increases the cost of health care with lengthier stays in hospitals and more intensive care required. Many different bacteria now exhibit multi-drug resistance(MDR), including staphylococci, enterococci, gonococci, streptococci, salmonella, as well as numerous other Gram-negative bacteria and *Mycobacterium tuberculosis. Enterococcus faecium*, *Staphylococcus aureus*, *Clostridium difficile*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa*, and *Enterobacteriaceae* group of bacterial pathogens that are the leading cause of MDR throughout the world. Some antibiotics in which resistance is reported are Cephalexin, Cephadroxil, Cefpodoxime, Cefpodoxime and Clavulanic acid, Amoxicillin and Clavulanic acid, Amoxicillin and Sulbactum, Lincomycin, Co – Trimoxazole, Erythromycin, Azithromycin, Chloramphenicol, Tylosine. Antimicrobial resistance occurs naturally over time, usually through genetic changes. However, the misuse and overuse of antimicrobials is accelerating this process. In many places, antibiotics are overused and misused in people and animals, and often given without professional guidance. Antimicrobial resistant-microbes are found in people, animals, food, and the environment; and can spread between people and animals, including from food of animal origin, and from person to person. Poor infection control, inadequate sanitary conditions and inappropriate food-handling encourage the spread of antimicrobial resistance.

RKUNIVERSITY

PP - 58

Cultivation and Biochemical Characterization of *Pleurotus sajor caju* on Agricultural and Office Waste for The Production of Neutraceutical Metabolites and Edible Variety

Mahek Pathak and Mehul P. Dave

Department of Life Sciences, Bhakta Kavi Narsinh Mehta University, Junagadh Gujarat, India
Email ID: drmehulpdave@gmail.com

Abstract

Mushroom cultivation is one of the promising areas of food and agricultural microbiology. Mushrooms are an excellent food source and addition to any diet or menu. Beyond tasting great, mushrooms are also a very nutritious addition to any cuisine. Mushrooms are by and large high in protein and dietary fiber while being low in fat, cholesterol, and carbohydrates. In the present study the nutraceutical potentials of mushroom *Pleurotus sajor caju* is investigated. The auxiliary objective of the present research is to explore the potential to convert agricultural waste into nutritionally and pharmaceutically useful metabolites. Optimum spawn requirement for 3 kilograms of agricultural and office waste substrate was determined. Different types of substrates were tested for obtaining the yield of *Pleurotus sajor caju*. Carton & paper was found to be a better substrate as compared to wheat straw in terms of time of mushroom pinhead body appearance. Variety of biochemical tests were performed to examine nutritional and biochemical properties of this delicious and nutritious food. Antioxidant activities of *Pleurotus sajor caju* suggest the use of this mushroom in cancer therapy.

PP - 59

Synthesis and Optical Properties of Pure and Basic Violet Doped KDP Crystal

A. M. Dholariya[1] and K. G. Raval[2]

[1]Bhagwan Mahavir College of Science and Technology, Surat, 395017, Gujarat, India
[2]Narmada College of Science and Commerce, Zadeshwar, Bharuch, 392011, Gujarat, India
Email ID: ankitadholariya26293@gmail.com

Abstract

The Potassium Dihydrogen Orthophosphate (KDP, KH_2PO_4) pure single crystals and doped with Basic Violet (Crystal Violet, $C_{25}H_{30}ClN_3$) dye, were successfully grown by slow evaporation method at room temperature with deionized water as a solvent to the vision of improve properties of KDP crystal. Two different concentration of Basic Violet dye 0.1mol% and 0.2mol% were considered while synthesis of KDP crystal. The Energy Dispersive X-ray Analysis (EDAX) confirms the presence of Basic violet dye in grown crystals. A tetragonal structure of all three crystals was confirmed and the value of lattice parameter was calculated by X – Ray diffraction (XRD) analysis. UV-VIS Spectroscopy studies transparency of crystal and optical band gap is slight differ of pure and crystal violet doped crystal.

RKUNIVERSITY

PP - 60

Isolation and Characterization of Phosphate Solubilizing Bacteria from Rhizosphere of *Ficus carica, Allium cepa* and *Trigonella foenum-graecum* Collected from Jetpur (Gujarat) Soil

Nikhita Vekariya and Mehul P. Dave

Dept. of Life Sciences, Bhakta Kavi Narsinh Mehta University, Junagadh, Gujrat, India
Email ID: drmehulpdave@gmail.com

Abstract

The overall health and the yield of agricultural crop largely depend on the ternary interaction among plant-soil-bacteria. Soil is a dynamic living matrix and it is not only critical resource for agriculture and food security but it is necessary for the maintenance of all forms of life. Phosphorus is required by plants mainly in its inorganic form. It is unavailable to plants because in the soil it is mostly present in the fixed form. Soil bacteria having the phosphate solubilizing capacity are called as Phosphate Solubilizing Bacteria (PSB). They convert the insoluble phosphate into soluble form through the production of organic acids and make it available for plant uptake and nutrition. They are also useful as biofertilizers as they belong to the plant growth promoting Rhizobacteria. The chemical fertilizers used in agriculture to increase yield, kill pathogen, pest, and weeds have a harmful impact on ecosystem. Hence there is an urgent requirement of utilizing PGPR and PSB in particular. In the present research the PGPR are isolated from Rhizosphere of Fig Plant (*Ficus carica*), Onion Plant (*Allium cepa*) and Fenugreek Plant (*Trigonella foenum-graecum*). The Phosphate solubilizing bacteria are screened using selective medium Pikovskaya medium. Growth parameters, Cultural characterization, Microscopic characterization and Biochemical characterization of the isolated organisms are performed to develop a potential biofertilizer for large scale agricultural application. This effort will definitely add up in bringing second green revolution which is a need of time.

PP - 61

Synthesis of Diversely Functionalized Triazolo[4,3-C]Pyrimidine Library

Shobhna Gadara

Department of chemistry, Sheth P.T.Arts & Science college, Godhra, 389001,Gujrat, India
Email ID: shobhnagadara@gmail.com

Abstract

Novel [1,2,4]triazole[4,3-c] pyrimidine-8-carboxamides were synthesized via oxidative cyclisation of hydrazono-1,6-dihydropyrimidine-5-carboxamide intermediates by the application of iodobenzenediacetate as a sole cyclizing agent. Here, we report a one-pot sequential strategy to generate the corresponding triazolopyrimidines by condensation of preprepared α-acylketene dithioacetals and arylamidines. Moreover, this process describes the application of presynthesized aryamidines, which omits the Suzuki-Miyaura cross-coupling reaction and hence provides metal-free organic synthesis in an atom and step economical fashion.

RKUNIVERSITY

PP - 62

Synthesis, Characterisation and Anticancer Activity of Some Heterocyclic Indole

Batuk M Bhil, Kahan I Pandya, Swati B Makwana, Sangita S Sharma

Department of Chemistry Hemchandracharya North Gujarat University, Patan, Gujrat, India

Email ID: Batukbhil1857@gmail.com

Abstract

Here we are discuss the bioactive heterocyclic indole as thiazole,pyrazoleincluded different methods for synthesis, characterisations by nuclear magnetic resonance, infrared, mass spectroscopy,elemental analysis andanticancer activity by using MCF-7.

PP - 63

Investigations on Structural and Electrical Properties of ZnO-SnO_2 Nanocomposite

Mayur Lagariya[1], Mansi Modi[1], Keval Gadani[1], P.S. Solanki[1], N.A. Shah[1*]

[1]Department of Physics, Saurashtra University, Rajkot – 360005, Gujarat, India
Email ID: snikesh@yhoo.com

Abstract

The present study is focused on investigations on structural and electrical properties of chemically grown ZnO-SnO_2 nanocomposites. ZnO and SnO_2 nanoparticles were synthesized by cost effective sol–gel method. Nanocomposites were prepared by mixing them in fixed weight ratio, i.e. 0, 25 and 50% wt% SnO_2 in ZnO. X–ray diffraction (XRD) measurement shows that all the pure and composite samples possess single phasic nature. Frequency dependent dielectric, a.c. conductivity and impedance have been carried out for all the samples at room temperature. Variation in a.c. conductivity has been discussed on the basis of Jonscher's universal power law. Power law fits suggest that charge conduction is possible through the correlated barrier hopping (CBH) mechanism. Role of SnO_2 content in the composites has also been discussed for the observed variations in impedance with frequency. Dielectric behavior has been understood in the context of universal dielectric relaxation (UDR) model and relaxation mechanism has been understood for presently studied nanocomposites.

RKUNIVERSITY

PP – 64

Detection of Ionizing Radiations by Studying Ceramic Tiles Materials Using Thermoluminescence Technique

H.C. Mandavia[1] and K.V.R. Murthy[2]

[1]M. M. Science college Morbi, Gujarat, India
[2]Applied Physics Department, M.S. University of Baroda, Gujarat, India
Email ID: himaphysics@yahoo.com

Abstract

Natural background radiation comes from two primary sources: cosmic radiation and terrestrial sources. Our natural environment has both livings and non-livings like – Sun, Moon, Sky, Air, Water, Soil, Rivers, Mountains, Forests, besides plants and animals. The worldwide average background dose for a human being is about 2.4 millisievert (mSv) per year. This exposure is mostly from cosmic radiation and natural radionuclides in the environment. The Earth, and all living things on it, are constantly bombarded by radiation from outer space. This radiation primarily consists of positively charged ions from protons to iron and larger nuclei derived sources outside our solar system. This radiation interacts with atoms in the atmosphere to create secondary radiation, including X-rays, muons, protons, alpha particles, pions, electrons, and neutrons. The present study and discusses the application of ceramic tiles as radiation dosimeters in case of nuclear fallout. Many flooring materials most of them are in natural form are used to manufacture floor tiles for household flooring purpose. Many natural minerals are used as the raw materials for the manufacturing ceramic ware. The following minerals are used to manufacturing the ceramic tiles i.e. Quartz, Feldspar, Zircon, Talc, Grog, Alumina oxide, etc. Most of the minerals are from Indian mines of Gujarat and Rajasthan states, some of are imported from Russian subcontinent. The present paper reports the thermoluminescence dosimetry Study of Feldspar and Quartz minerals collected from the ceramic tiles manufacturing unit, Morbi. The main basis in the Thermoluminescence Dosimetry (TLD) is that TL output is directly proportional to the radiation dose received by the phosphor and hence provides the means of estimating unknown radiations from environment.

RKUNIVERSITY

PP - 65

Development and Validation of HPLC Method for Simultaneous Estimation of Fipronil and Permethrin

D. N. Rajdev, K.V. Shah and P. P. Kapupara

School of Pharmacy, RK University, Rajkot 360020, Gujarat, India
Email ID: rajdevdhawal48@gmail.com

Abstract

On February 22, 2018, CDSCO approves the new drug combination of Fipronil (6.1% m/v) and Permethrin (54.5% m/v) in India. There is no any analytical method available for determination of both drugs simultaneously. To develop and validate HPLC Method for Simultaneous Estimation of Fipronil and Permethrin. HPLC of Cyberlab (Model: Cyberlab 1600EX) with Hypersil C_{18} (4.6mm × 250mm, 5µm particle size) column was used for separation. It contains Rheodyne loop injector 7725i with 20 µL capacity and UV detector (Deuterium lamp). Mobile phase consists methanol HPLC grade, flow rate was 0.5 ml/min. and UV detection performed at 225 nm. By using the developed method, R_t value was found to be 5.87 min. for Fipronil and 7.57 for Permethrin. The method has been validated for linearity, accuracy and precision. Linearity of fipronil was 5-50 µg/ml and for Permethrin it was 45-450 µg/ml. The percentage recoveries obtained for Fipronil was 99.15-101.52 % and for Permethrin it was 99.14-101.91 %. The developed method offers several advantages such as simplicity, specificity, reproducibility, accuracy and precision. Further, improved sensitivity makes it specific and reliable for its intended use. Results of validation parameters demonstrated that the analytical procedure is suitable for its intended purpose and meets the criteria defined in ICH Q2.

PP – 66

Functional aspects of *Lactobacillus* strains

Aarti A Boricha and B.R.M. Vyas

Department of Biosciences, Saurashtra University, Rajkot 360005, Gujarat, India
Email ID: aarti.boricha30@gmail.com

Abstract

The protective and probiotic characteristics of lactic acid bacteria isolated from various fruits, fermented foods and human sources were investigated. Lactic acid bacterial strains were subjected to *in vitro* analysis to determine their functional probiotic potential. The isolates exertantibacterial activity against food spoilage organisms like *Salmonella typhi*, *Bacillus* spp. and various gastro-intestinal pathogens such as *Escherichiacoli, Enterobacter aerogenes,*and*Shigella*. All isolates possess antifungal spectrum against food spoiling, mycotoxin producing and human pathogenic fungi i.e.*Aspergillus, Penicillium, Rhizoctonia* and *Candida*. Degree of inhibition by LAB varied with the test pathoges and observed to be strain specific.

RKUNIVERSITY

PP – 67

Influence of pH on the decolorization of reactive magenta HB by MnP

J.B. Gohel and B.R.M. Vyas

Department of Biosciences, Saurashtra University, Rajkot-360005, Gujarat, India
Email ID: jayshreegohel26@gmail.com

Abstract

Discharge of textile effluents in water body affects its quality adversely. The dyes present may be carcinogenic and toxic. Removal of such dyes before discharging the effluents into natural water streams is essential and requires appropriate treatment technologies. The white rot fungi can efficiently degrade lignin and structurally diverse organo-pollutants, like, dyes. Manganese Peroxidase (MnP) is an extracellular enzyme requiring Mn^{+2} as redox coupler. In the present study, degradation of textile dyes was carried out by MnP produced by a lignin degrading basidiomycetes strain TRV (*Trametes versicolor*). The poster presents experimental evidences of decolorization of Reactive Magenta HB by MnP at various pH Maximum degradation was observed at pH 4.

PP - 68

Anti-cancer Evaluation of 1,5-disubstituted Tetrazoles using Ugi-azide four-component reactions (UA-4CRs)

Chintan Pandit and Khushal Kapadiya

Bio-Research and Characterization Centre, School of Science, Department of Chemistry,
RK.University, Rajkot, Gujarat, India
Email ID: chintanpandit11@gmail.com

Abstract

Azide isocyanide-based multicomponent reactions allow the construction of relatively complex molecules through a one-potsynthesis.The proposed reactions have been coupled of four classes of compounds including 3-phenoxybenaldehyde, various aromatic amines, TMS-N_3 and tertiary butylisocynide, which is known as Ugi-azide four-component reactions (UA-4CRs). It generated a diverse class of 1,5-disubstituted tetrazoles which are an important drug-like scaffold known for their ability to mimic the carcinogenic conformers used in medicinal chemistry. This full paper presents a concise, novel, general strategy to access a surplus of new heterocyclic scaffolds through the Ugi-azide reaction. Frequency in anti-cancer drug design can be partly attributed to their being extremely common in nature and there are multiple metabolic pathways and cellular processes within cancer pathology that can be susceptible to heterocycles-based drugs. The anti-cancer screening of derived molecules were carried out using one dose response study using NCI-60 cell-lines and found most active in breast cancer cell-lines.

RKUNIVERSITY

PP – 69

Design and Synthesis of Formic acid Catalyzed and Cyclised Novel Modified Routefor *N*,7-diphenyl-7*H*-benzo[7,8]chromeno[2,3-d]pyrimidin-8-amine derivatives and Study of their Antimicrobial profile

Yogesh Bhola[1], Piyush Dholaria[2], khushbu dodeja[1] and Yogesh Naliapara[1]

[1]Department of Chemistry,Saurashtra University, Rajkot,360005, Gujarat India
[2]School of Science, Department of Chemistry, RK University, Rajkot, 360020, Gujarat, India
Email ID: yogeshbhola90@gmail.com

Abstract

A new series of N,7-diphenyl-7H-benzo[7,8] chromeno [2,3-d] pyrimidin-8-amine derivatives was synthesized using formic acid as catalysed and solvent. The structures of the new derivatives were confirmed by the spectral data and elemental analyses. More over Anti microbial and anti fungal activities has been carryout using *S. aureus, S.pyogenes, E.coli, P.aeruginosa, C.albicans, A.niger* and drugs Nystatin, Greseofulvin, Ciprofloxacin, Chloramphenicol for all new novel compounds.

PP - 70

Fabrication of Fast Dissolving Nitinpyram Tablet for Treatment of External Parasites in Animals

Rajesh Devani and Vipul Patel

School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: rdevani464@rku.ac.in

Abstract

The aim of present research work was to develop fast dissolving Nitenpyram tablet formulation for Treatment of External Parasites in Animals. In the present research work, Fast dissolving Nitenpyram tablet formulation was planned by including super disintegrant and surfactant in tablet formulation. The intension of using super disintegrant in tablet formulation was to get faster disintegration of tablet while the purpose of addition of surfactant was to reduce interfacial tension and hence improve solubility of Nitenyram in hard water. For the removal of external parasite Nitenpyram tablet formulation was first dissolve in water and same solution were used as a bathing solution. Nitenpyram formulation was prepare by direct compression method using lactose as a diluent cross carmellose as super disintegrant, SLS as surfactant, talc and magnesium stearate as lubricant and glidant respectively. The tablets were evaluated for different tablet evaluation parameter appearance, color, presence or absence of different tablet defects hardness, friability, weight variation test, disintegration test, dissolution test. The result of above evaluation test has concluded that cross carmellose sodium (9%) having satisfactory results in all evaluation trial compare to the other proportions.

RKUNIVERSITY

PP - 71

Medicinal Applications of Active Barbiturate Derivatives

Jalpa Chanpa, Dileep Sindhav, Gopal Kathiriya and Piyush Dholaria

Department of Chemistry, School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: piyush.dholariya@rku.ac.in

Abstract

The emerging role of barbitones in pharmaceutical chemistry as well as in biochemistry has stimulated enormous interest in its synthesis and therapeutic importance. Barbiturates have its major application in the central nervous system (CNS). The barbituric acid derivatives possess different biological activities like sedative, anticonvulsant, cardiovascular, etc. All the compounds in the present study have been evaluated for their in vitro biological assay like antibacterial activity towards gram positive and gram negative bacterial strains like *E-coli, proteus, staphalococcus, aureus, knebsila, salmonela and enterococcus*. The biological activity of synthesized compounds was compared with standard drugs. Benzyl penicillin and sparfloxacin drugs give more activity for Anticancer and antibiotics.

PP - 72

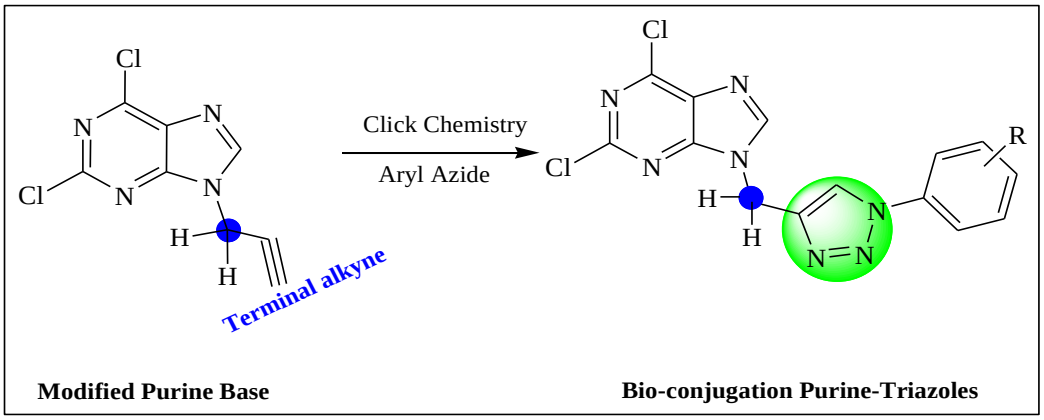
Synthesis of Purine-based Triazoles by Copper(I)-catalyzed HuisgenAzide–Alkyne Cycloaddition Reaction

Khunt Darshit, Koladiya Dharmik, Sorathiya Jaydeep, Lakkad Kartik and Khushal Kapadiya

School of Science, Department of Chemistry, RK University, Rajkot, Gujarat, India
Email ID: khushal.kapadiya@rku.ac.in

Abstract

An efficient protocol for the synthesis of substituted 1,2,3-triazol-9*H*-purines via copper (I)-catalyzedclick chemistry of 2,6-dichloropurine with aromatic azide has been reported. A wide rangeof 1,4-disubstituted triazoles (*N*-9 substituted purines) was accessible in good-to-excellent yields with remarkablefunctional group tolerance. The base-catalyst ratio was tuned to achieve optimum reaction condition (>95%conversion and purity in most cases). Furthermore, the structure of 4i has been unambiguously assigned byX-ray crystallographic study to yield structural information on the 1,3-dipoles entering the reaction.



RKUNIVERSITY

PP - 73

Construction of 3,4-Dihydro-1,2-diazete Ring through 4p Electron Cyclization of 4-Hydroxy-2-oxo-2H-Chromene3-carbaldehyde[(1E)-arylmethylene]Hydrazone.

Ashokbhai Rathod Dhananjay Pandya and Yogesh T. Naliapara

Department of Chemistry, Saurashtra University, Rajkot-360005, Gujarat, India
Email ID: ashokrathod0018@gmail.com

Abstract

A new, short and efficient synthesis of 4-hydroxy-3-(4-aryl-3,4-dihydro-1,2-diazet-3-yl)-2H-chromen-2-one is described in which the 3,4-dihydro-1,2-diazete ring is constructed from arylmethylene hydrazone by 4π electron cyclization as per electrocyclic reaction.

PP - 74

Study of Nano-structured $Mn_{0.6}Co_{0.2}Ni_{0.2}Fe_2O_4$ Synthesized by Auto Combustion Method

Laxmi J. Hathiya[1], A. R. Tanna[2], J. D. Baraliya[1] and H. H. Joshi[1]

[1]Department of Physics, Saurashtra University, Rajkot - 360005, India
[2]School of Science, RK University, Rajkot - 360020, India
Email ID: ashishrtanna@gmail.com

Abstract

The present paper reports the study of nano-structured mixed spinel ferrite $Mn_{0.6}Co_{0.2}Ni_{0.2}Fe_2O_4$ prepared by auto-combustion method which is faster and easier compared to other wet-chemical and conventional ceramic methods. The composition was synthesized at much lower temperature (180°C-200°C) compared to the ceramic technique. The thermal images were captured by thermal camera during the combustion synthesis process to understand thermal profile. The X-ray diffraction pattern of the synthesized powder confirmed single phase fcc spinel structure. The chemical composition of the final ferrite product is ascertained by Energy Dispersive Analysis of X-ray mapping. The FTIR spectra at room temperature showed two strong absorption characteristic bands of spinel ferrite. The nano-structure was confirmed by TEM analysis. The magnetic behavior of ferrite was studied by M-H loop at room temperature and thermal variation of low field ac susceptibility.

RKUNIVERSITY

PP - 75

Formulation Development and Evaluation of Gastroretentive Unfolding Bilayer Film of Orlistat

Maheshkumar V. Katariya, Piyush H. Makavana , Vishvesh B. Kanabar and Vipul P. Patel

School of Pharmacy, RK University, Rajkot, Gujarat, India
Email ID: katariyamahesh62@gmail.com

Abstract

The aim of formulation of gastroretentive unfolding bilayer film of orlistat was to provide quicker onset of action in short duration of time by immediate release polymeric film and prolongs the delivery of drug by sustained release polymeric film. Preliminary blank immediate release polymeric film was prepared by solvent casting technique by using various polymer like HPMC E50 LV, HPMC K4M, Sodium alginate, Carbopol 934, PVA (Poly Vinyl Acetate), Sodium CMC (Carboxy Methyl Cellulose) and another polymer. Same as immediate release film, sustained release polymeric film was prepared by solvent casting technique by using Eudragit RL 100, Ethyl cellulose, Eudragit S 100, Eudragit R 100 and combination of polymers. Preformulation study was carried out by the Differential Scanning Calorimetry (DSC) and Fourier Transfer Infrared (FTIR) study. Films were evaluated for various evaluation parameters like general appearance, thickness, % elongation, tensile strength, folding endurance, surface pH, disintegration time, *in vitro* dissolution study and stability study. By optimizing the preliminary batch, it was concluded that single polymer HPMC E50 LV was suitable for the formulation of immediate release film. According to all the evaluation criteria, C1 batch is ideal for the formulation of immediate release film. Optimization result of sustained release film concluded that combination of two polymer HPMC E50 LV and Eudragit RL 100 was suitable for the formulation of sustained release film with its concentration range like 3 % to 7 % (0.6 gm to 1.4 gm). According to all the evaluation criteria, F4 and F9 batch is ideal for the formulation of sustained release film. The result of Differential Scanning Calorimetry study suggested that there were no interaction between drug and polymers.

RKUNIVERSITY

PP - 76

Effect of Chemical Substitution on The Properties of $BaTiO_3$: A review.

Vinod Rathod[1], Pankaj Solanki[2], Avinash Ayas[2], Chirag Savaliya[2], Ashish Ravalia[3] and Bharat Kataria[3]

[1] Department of Physics, H & HB Kotak Science College, Rajkot, Gujrat, India
[2] Department of Physics, Saurashtra University, Rajkot, Gujrat, India
[3] Department of Nanoscience and Advanced Materials, Saurashtra University, Rajkot, Gujarat, India
Email ID: pankajsolanki672@gmail.com

Abstract

In this communication, we have reviewed research papers of chemically substituted $BaTiO_3$ and discussed the modifications in their physical properties. Synthesis techniques and sintering temperature plays an important role in the physical properties of $BaTiO_3$. Structural and microstructural modifications, electrical properties and ferroelectric properties get modified with chemical substitution in various scientific reports has been discussed. This review will help researchers to study the chemical substitution effect in $BaTiO_3$ in the field of Material Science.

PP - 77

Chemical and Nutrient Analysis of Soil Samples For Wheat Crop Production

Khushali Chothani, Deep Pandya, Chirag Vasoya and Meghrajsinh Zala

School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: khushalichothani93@gmail.com

Abstract

Chemical and nutrient of soil samples of wheat rhizosphere from different regions like Rajkot, Amreli and Bhuj was analyzed. For better crop production elements should be in proper amount in rhizosphere of soil. Physical and chemical analysis like pH, OC, EC and determination of P_2O_5, K_2O, Cu, Fe, Mn, Zn available sulphur of the soil is carried out to indicate the efficiency of soil for supplying plants with nutrients in available forms as well as identification of the factors affecting this efficiency in the soil. Soil of the rhizopheric region from different areas were taken and checked the biological and microbial activity (CFU), micro and macronutrients present in it. For the soil samples collected, the wheat productions which were obtained in the month of March-April 2018 are Rajkot 5925 kg per hectare, Amreli 3456 kg per hectare, Bhuj 1733 kg per hectare respectively. Due to proper combination of nutrients in soil of Rajkot it gives highest wheat production compared to other samples. As per obtain values through chemical and nutrient analysis, the crop production of wheat can be increased by using proper natural or artificial fertilizer and also take some measures for soil fertility.

RKUNIVERSITY

PP - 78

Photocatalysis For Energy Harvesting and Its Application

Krina Parmar[1,2] and Karan Solanki[1]

[1]School of Science, RK University, Rajkot-360020, Gujarat, India
[2]Department of Nanoscience& Advanced materials, Saurashtra University, Rajkot-360005, Gujrat, India
Email ID: krinaparmar8520@gmail.com

Abstract

Environmental pollution and destruction as well as the lack of sufficient clean and natural energy resources are some of the most serious problems presently faced on a global scale. The increase in world population and the rampant unregulated industrial growth have accelerated energy consumption, while the unabated release of toxic agents and industrial waste into the air and waterways has resulted in pollution-related diseases, global warming, and abnormal climatic change. It should therefore be our goal to contribute to the development of environmentally harmonious, ecologically clean and safe, sustainable, and energy efficient chemical technologies. Photocatalysis, in which the inexhaustibly abundant, clean, and safe energy of the sun can be harnessed for sustainable, nonhazardous, and economically viable technologies, is a major advancement in this direction. Titanium−oxide material in different types and forms have shown great potential as ideal and powerful photocatalysts for various significant reactions due to its chemical stability, nontoxicity, and high reactivity. Photocatalyst is a gifted method which can be used for various purposes like degradation of various organic pollutants in wastewater, production of hydrogen, purification of air, and antibacterial activity. When compared with other methods, photocatalysis is rapidly growing and gaining more attentiondue to its several advantages such as low cost and attractive efficiency. Photocatalysis is a unique process for rectifying energy and environmental issues. In this communication, we present the basic concepts of Photocatalysis and hydrogen separations useful for energy harvesting. Also, few important concepts of hydrogen separation and application will be displayed in this commnications.

RKUNIVERSITY

PP - 79

Antioxidant Potential of Various Fractions of *Launaea pinnatifida* Leaves and Roots Extracts by *in vitro* Methods

H. T. Makwana and D. J. Pandya

School of Pharmacy, RK University, Rajkot, Gujarat, India
Email ID: himanshu23makwana@gmail.com

Abstract

According to the Ayurvedic literature *Launaea pinnatifida* Cass is belong to the class of controversial drug *Gohjiva*. This plant is well known and valuable herb as per the traditional and Ethnobotanical information. Leaves of this plant has been used since ancient time as herbal remedy for jaundice, diuretic, blood purifier and hepatoprotective action by the tribal people of the Western Ghats. However, the plant remains largely unexplored. The antioxidant capacity of the various fraction of *L. Pinnatifida* leaves and roots extracts, obtained by successive solvent extraction with various polarity of solvents namely Pet. Ether, Chloroform, Methanol and Water, was evaluated by means of different *In vitro* methods; DPPH radical scavenging activity (IC_{50} value for standard ascorbic acid and *L. pinnatifida* leaves methanol fraction was 165.8 and 220.3 respectively), Ferric ion reducing antioxidant power assay (FRAP) and total antioxidant capacity (TAC) by Phosphomolybdenum method. Those findings means that *L. Pinnatifida* leaves methanol fraction was most active fraction for free radical scavenging activity compared to all other fractions hence consider as a most potent fraction for the isolation of phytochemical also used in a food industry for protection against oxidative damage. Antioxidant results also support the traditional claim of this plant. The strongest antioxidant activity of methanol fractions of leaves could be due to the presence of flavonoids and phenols.

PP - 80

Synthesis of Triazine Derivatives Bearing Triazole and Sulphonamide Isoxazole

Viral H Kariya[1] and Manhar V. Parsania[2]

[1]Industrial Chemistry Department, Shree M. & N. Virani Science College, Rajkot, 360 005, Gujarat, India
[2]M. M. Science College, Morbi, Gujarat, India
Email ID: vhkariya@vsc.edu.in

Abstract

We have developed in efficient and easy synthesis of triazine derivatives bearing triazole and sulphonamide isoxazole. Initially, the reaction of cyanuric chloride with 4-amino-*N*-(5-methylisoxazol-3-yl)benzenesulfonamide carried out at 0-5°C using Base. Further, the resultant indermediate reacted with 4-amino-5-(pyridin-3-yl)-4H-1,2,4-triazole-3-thiol at room temperature using base to afford 4-((4-chloro-6-((3-mercapto-5-(pyridin-3-yl)-4H-1,2,4-triazol-4-yl)amino)-1,3,5-triazin-2-yl)amino)-N-(5-methylisoxazol-3-yl)benzenesulfonamide derivatives in good to excellent yield.

RKUNIVERSITY

PP - 81

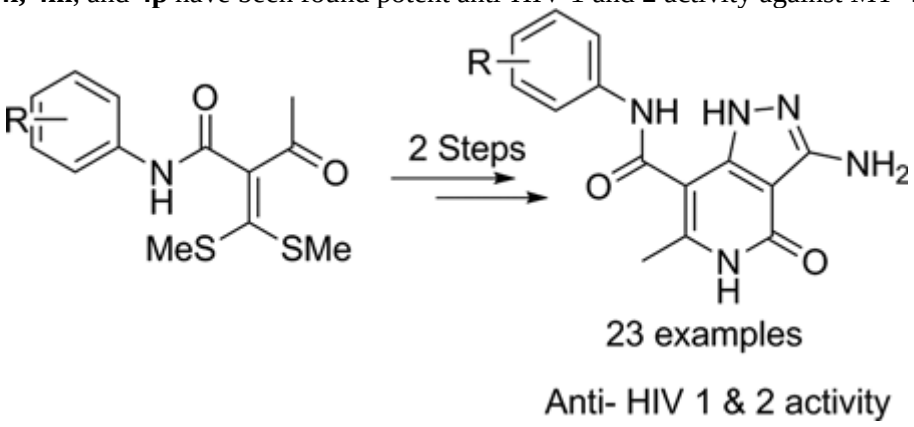
Facile synthesis of Highly Functionalized Novel Pyrazolopyridones Using Oxoketene Dithioacetal and their Anti-HIV Activity

Prashant S. Gajera and Mahesh M. Savant

Department of Industrial Chemsitry, Shree M & N Virani Science College, Rajkot 360005, Gujarat, India
Email ID: psgajera@vsc.edu.in

Abstract

A series of novel 3-amino-4,5-dihydro-6-methyl-4-oxo-*N*-aryl-1*H*-pyrazolo[4,3-c]pyridine-7-carboxamide have been synthesized starting from various oxoketene dithioacetals. The cyclocondensation reaction of 2-(bis(methylthio)methylene)-3-oxo-*N*-arylbutanamide **2a–w** with cyanoacetamide using NaO*i*Pr as base under reflux condition afforded novel highly functionalized pyridone **3a–w** derivatives. Further, [3 + 2] cyclocondensation reaction of pyridones with hydrazine in the presence of alcohol was yielded pyrazolopyridones (23 nos) **4a–w** with excellent yields. All newly synthesized compounds were evaluated for *in vitro* anti-HIV activity using MTT method. Most of these compounds have showed moderate to potent activity against HIV-1 (III_B) and HIV-2 (ROD) strains with an IC_{50} ranging from >18 IC_{50}[µg/ml] to <100 IC_{50}[µg/ml]. Among them, compounds **4j** and **4v** were identified as the most promising compound for both types of HIV strains. (IC_{50} = 18 µg/ml). Three compounds **4l, 4m**, and **4p** have been found potent anti-HIV 1 and 2 activity against MT-4 cells.



RKUNIVERSITY

PP - 82

Novel Cu (II) and Ni (II) Heterochelates: Synthesis, Spectroscopic, Thermal, Fluorescence and In-vitro Biological Studies

Maulik Raja[1], D. H. Jani[2] and S.B. Koradiya[3]

[1]Research Scholar, R. K. University, Rajkot, 360020, Gujarat, India
[2]Assistant Professor, College of Computer Science and Information Technology, Junagadh, 362001, Gujarat, India
[3]Assistant Professor, Atmiya University, Rajkot, 360001, Gujarat, India
Email ID: raja_maulik96@ymail.com

Abstract

4-acyl pyrazolone derivatives and their heterochelates are well known for their numerous activity. Modi et al.[1,2,3,4]. However, here we represent the in-vitro biological, fluorescence and thermal studies of some 4-acyl bis pyrazolone Schiff bases as ligand and their Cu(II) and Ni(II) metal based heterochelates. Structural and spectroscopic properties have been studied on the basis of elemental analysis, FT-IR, ^{1}H-NMR andfluorescence spectral studies. The structure of heterochelates confirmed by thermal analysis (TGA and DSC curve) and FAB mass spectra. The ligands and their hetero chelates are studied at room temperature for their fluorescence and in-vitro biologicalscreening.

PP - 83

Synthesis and Antimicrobial Scrrening Shiff Bases of Coumarinyl Chalcones

Sai Pranathi P, Khushal Kapadiya, Vaibhav Padaliya and Pritesh Ranpariya

School of Science, RK University, Rajkot-360020, Gujarat, India
Email ID: pranapariya082@rku.ac.in

Abstract

Among the many moieties with great pharmaceutical importance are the class of Coumarins; Schiff bases and chalcones. Because of their notable biological activities and ease of preparation they are the compounds of choice for many researchers. Bearing these in mind we have synthesizes we have prepared a series of Schiff bases from the coumarinyl charcone parent. The synthesized compounds were tested for antibacterial and antifungal activities against a few stains of gram positive and gram negative bacteria, *A. niger* and *C. albicans* fungi. Chalcone D2 was found to possess greater antibacterial activity against all stains of bacteria and fungi when compared to 3-acetylcoumarin. The amine showed increase in antibacterial activity against *B. subtilus* and *S. typhi*. Among the corresponding Schiff Bases the compounds F3 showed the maximum antibacterial activity against all the stains of bacteria, the compound F4 was found to be effective against the fungi *A. niger* and bacteria *B. Subtilus*. The reaction was monitored by TLC and the compounds were characterized by GC MS and ^{1}H NMR.

RKUNIVERSITY

PP - 84

Screening of Different Plant Aqueous Extracts for Anti -Mitotic Activity Using *Vigna Radiata* Germination Assay and *Allium Cepa* Root-Tip Assay

Mayur P. Parmar and Dipak V. Parmar

Shree M. & N. Virani Science College, Kalawad Road, Rajkot, Gujarat, India.
Email ID: mayur.biochem@gmail.com

Abstract

India, "The Botanical garden of the World" produces the highest range of therapeutically important plants. Considerable works have been done on these plants to treat cancer, and some plant products have been marketed as anticancer drugs, based on the traditional uses noted in The Ayurveda. Drugs that disrupt mitotic progression, which are commonly referred to as 'anti-mitotics', are used extensively for the treatment of cancer. Traditional anti mitotic agents include the microtubule toxins such as the vinca alkaloids, taxol and other taxanes all of which have proven successful in the clinic. However, highly unpredictable reactions, drug resistance and toxicity are common problems needs a new generation of anti mitotic drugs. This study seeks to explore the anti mitotic efficiency of some of such notable, not much uncommon Indian plants and herbs. To evaluate this efficiency, two basic and standard assays that are been used are the *Vigna radiata* germination assay and the *Allium cepa* root-tip assay. The positive and negative controls were standardized with Vincristine sulphate and water respectively. At present some Indian plants that are known to have anticancer property and are been used in cancer treatment are selected for primary screening for their anti mitotic effect and as an approach to validate such screening methods. We have screened four plants; *Cedrus Deodara* (Devdaar), *Hedychium spicatum* (Kapur kanchli), *Jateorhiza palmate* (Kolambo), *Cassia angustifolia* (Sonamukhi) and checked the effect of their aqueous extract on the germination inhibition assay followed by the *Allium cepa* root tip assay. These plants extracts have shown the promising anti mitotic effect (or may be cytotoxic effect, yet to prove!) as they have shown same effect as that of the vincristine, suggesting requirement of further advance research for phytochemical analysis and characterization of the active component of the extract.

RKUNIVERSITY

PP - 85

Study of Effect of Solvents and Catalyst on Synthesis of Dihydropyridine Derivatives

A.R. Moliya and R. M. Talaviya

Department of Chemistry, Shree H N Shukla College of science, B/H marketing yard, Rajkot,360001, Gujarat, India
Email ID: aaryanmoliya1192@gmail.com

Abstract

The heterocyclic compounds having dihydropyridine scaffolds possess various biological and pharmaceutical activities. The Hantzsch reaction is one of the oldest and economical multi-component reactions (MCRs) methods for the synthesis of dihydropyridine derivatives. Now a day, the multi-component reactions become more importance of chemist in order to rapid synthesis of diverse molecules for medicinal purpose. This technique is widely used for synthesis of drug type lead molecule in industries as well as academia. Hence, by using this method, the considerably change occur in cost and time of reaction. These changes become more variable, if reaction carried out in various solvents and presence of catalyst.

PP - 86

Repercussion of Adding Zns Nano Particles on Structural, Functional and Nonlinear Optical Properties of Potassium Pentaborate Crystals

K. R. Rathod[1], S. J. Nakum[1], S. V. Taviya[1] and A. P. Kochuparampil[2]

[1]School of Science, RK University, Rajkot-360020, Gujarat, India
[2] Physics Department, Christ College, Rajkot-360005, Gujarat, India
Email ID: karan.rathod@rku.ac.in

Abstract

Potassium pentaborate (KPB) is a famous nonlinear optical (NLO) material crystal. To revise and engineer its properties of KPB crystals, ZnS nano-particles were added. The nano particles were synthesized by co-precipitation method. Pure Potassium pentaborate and nano-particles added Potassium pentaborate (KPB) crystals were grown by slow evaporation technique. In the pure Potassium pentaborate, 5w/v% of Zinc sulphide nanoparticles were added. The powder XRD was carried out to identify the structure of both pure and ZnS nano particles added KPB crystals. It confirmed the orthorhombic structure. The EDAX study was done to verify the added nano particles. To diagnose various functional groups, FT-IR spectra were characterized for pure and ZnS nano particles added KPB. The FTIR spectra of ZnS nano particles added KBP give stamp of approval of nano particles. The Kurtz and Perry powder technique study indicates that all samples were exhibiting NLO properties with varying SHG efficiency.

RKUNIVERSITY

PP - 87

Synergistic and Antimicrobial Activity of *Azadiracta indica* Fruit Against Various Microbial Strains and Antibiotics.

Anjali Trivedi, Mital Chavda and Nidhi Limbani

School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: anjalitrivedi3110@gmail.com

Abstract

The synergism is a new concept in developing agents for antimicrobial therapy. The new approach is combination therapy that is combination of different plant extracts with antibiotics against resistant microorganisms which may lead to new ways of treating infectious diseases. Synergistic interaction means when two agents are combined together, and they exert an inhibitory effect that is greater than the sum of their individual effects. The present study focuses on the *in vitro* antimicrobial activity and synergistic activity of part of plant *Azadiracta indica.* The synergistic antimicrobial activity was evaluated by the Agar disc diffusion method against Gram- positive, Gram -negative and Fungi. Result and The plant extracts with Gentamicin showed good synergistic antibacterial activity against Gram-positive and Gramnegative bacteria. The plant extracts with Ketoconazol showed good synergistic antifungal activity against fungi.Conclusion: Hence,these plant extracts can be used as good medicinal sources in combination with antibiotics to treat infectious diseases.

PP - 88

Diversity Oriented One-Pot Synthesis of Some Novel 1,4-Dihydropyridines Derivatives

Gaurang G. Dubal[1], Pratik K. Talpara[2], Janak J. Surani[2], Pankaj M. Singala[2] and Viresh H. Shah[1]

[1]School of Science, R. K. University, Rajkot – 360020, India
[2]Department of Chemistry, Saurashtra University, Rajkot - 360005, India
E-mail ID: dr.gaurangdubal@gmail.com

Abstract

The synthesis of a novel dihydropyridine, bearing pharmacophore, has been achieved by applying three component Hantzsch-type condensation. The products were assayed for their in vitro biological assay antibacterial activity against with two Gram-positive bacteria Staphylococcus aureus MTCC-96, Streptococcus pyogenes MTCC 443, two Gram-negative bacteria Escherichia coli MTCC 442, Pseudomonas aeruginosa MTCC 441 and three fungal strains Candida albicans MTCC 227, Aspergillus Niger MTCC 282, Aspergillus clavatus MTCC 1323 taking ampicillin, chloramphenicol, ciprofloxacin, norfloxacin, nystatin, and griseofulvin as standard drugs, Compounds XIIa, XIIb, XIIc, XIIg, XIIh, found to be a potent antimicrobial agents.

RKUNIVERSITY

PP - 89

Synthesis and Antimicrobial Evaluation of 1,3,4-Oxadiazole Bearing Schiff Base Moiety

Piyush Dholaria[1], Gaurang Dubal[1], Khushal Kapadiya[1] and Yogesh Bhola[2]

[1]School of Science, Department of Chemistry, RK University, Rajkot, 360020, Gujarat, India
[2] Department of Chemistry, Saurashtra University, Rajkot, 360005, Gujarat, India
Email ID: pvdholariya@gmail.com

Abstract

New series of 4-((5-(2-chlorophenyl)-1,3,4-oxadiazol-2-yl) methoxy)-N-(benzylidene derivatives) benzenamine **(5a-k)** have been synthesized for development as antimicrobial agents. Synthesized compounds were screened for their in vitro antibacterial activity against Gram-positive bacteria (Pseudomonas aeruginosa, Streptococcus pyogenes), Gram-negative bacteria (Escherichia coli, Staphylococcus aureus), and antifungal activity (Candida albicans, Aspergillus niger, Aspergillus clavatus). Synthesized compounds were characterized by infrared, ^{1}H NMR, ^{13}C NMR, and mass spectra. The synthesized compounds **5b, 5c, 5g** and **5i** showed potency in terms of antimicrobial activity against tested microorganisms.

PP - 90

Biological Wastewater Treatment

Dr. Vijay Kumar, Jalak H. Limbasiya and Hardik A. Khunti

School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: jlimbasiya646@rku.ac.in

Abstract

Nowadays many wastewater problems occur worldwide. Water resources are polluted by anthropogenic sources including household waste, agricultural waste and industrial effluents. Public concern over the environmental impact of wastewater pollution has increased. Several conventional techniques to convert the wastewater in useable form i.e. chemical coagulation, adsorption, activated sludge method, etc. are already in use, however there are still some limitations especially that of high operation costs. To overcome this situation, microorganisms can be used to treat the wastewater and can make it useable for household and agricultural purpose. Using microorganisms to treat the wastewater will decrease the cost of process and will be easily applicable compare to other treatment processes.

RKUNIVERSITY

PP – 91

Total Electron Scattering Cross Section Calculations for Bio-molecules Tetrahydropyran $(CH_2)_5O$ and Tetrahydrofurfuryl Alcohol $(C_5H_{10}O_2)$

Jayantilal. G. Raiyani

Shri M. M. Science College, Morbi.-363642, Gujarat, India
Email ID: j1patel@yahoo.co.in

Abstract

The rotational excitation total cross section (TCS) for electron scattering from bio-molecules, tetrahydropyran $(CH_2)_5O$ and tetrahydrofurfuryl alcohol $(C_5H_{10}O_2)$ have been calculated from 1 to 60 eV., using the Born Eikonal Series (BES) Approximation method. In present calculations, the hard sphere dipole interaction potential model is employed for electron-molecule interaction. The TCS energy function for electron-tetrahydropyran (THP: $(CH_2)_5O$ and tetrahydrofurfuryl alcohol (THFA: $C_5H_{10}O_2$) bio-molecule collisions is significantly show the sharp decrement between 1 to 20 eV and above it's decreases smoothly. Comparison is also made between the present results for tetrahydropyran (THP: $(CH_2)_5O$ and tetrahydrofurfuryl alcohol (THFA: $C_5H_{10}O_2$) with earlier TCS experiment measurements data and theoretical results available in the literature. The present theoretical calculated results are found good agreement with experiment measured data.

PP – 92

Applications and Working methods of Active Matrix Organic Light Emitting Diodes

D. N. Raval[1], P. A. Kasundra[1] and K. M. Rajkotiya[2]

[1]Shri M. P. Patel B.Ed. & Science College-Jodhpar (Nadi), Gujarat, India
[2]M. M. Science College-Morbi, Gujarat, India
Email ID: divu23199@gmail.com

Abstract

This paper presents the concept of Active Matrix Organic Light Emitting Diodes as a modern trend in Light Emitting Devices. This paper introduces AMOLED device structure and operation, AMOLED materials, Evolution of AMOLED. AMOLED are used in television, computer monitors, small portable system screens such as mobile phones and PDA, watches advertising, information and indication. AMOLED are also used in light sources for space illumination and in large-area light-emitting elements. Due to their early stage of development, they typically emit less light per unit area than inorganic solid state based LED point-light sources. Different fabrication processes and technologies are covered. Also Passive Matrix OLED driving schemes are outlined.

RKUNIVERSITY

PP - 93

Variation of Ambient Aerosol Mass Concentration Over Rajkot Using Quartz Crystal Microbalance Measurements

Ritweej Rajeev Ranjan

M. M. Science College, Morbi-363642, Gujarat, India
Email ID: ritweej@gmail.com

Abstract

The Atmospheric aerosols are tiny particles suspended in ambient air with size range from 10^{-3} μm to 10^{2} μm in solid or liquid phase. Due to geographically localized sources, sinks, and relatively short life times, aerosols show highly spatial and temporal heterogeneity in the atmosphere. Therefore the characteristics of ambient aerosols are very important from the Geosphere and Biosphere perspective due to variety of reasons. The aerosol sources are of different types like natural and anthropogenic. Due to the availability of their wide size spectrum, their short life times, spatially and temporally heterogeneous aerosol field, their characterization is a real challenge. The size distribution and mass concentration are important parameters in order to understand their source strength, environmental impact, optical properties, radiative effects and climatic implications. Keeping the above view in the mind, measurements on mass and size distribution of ambient atmospheric aerosols have been started at Department of Physics, Saurashtra University, Rajkot, using a ten channel Quartz Crystal Microbalance Cascade Impactor (QCM), since May 2008. Three years data collected at Saurashtra University campus are analyzed and the results are reported in this paper. It is found that the total mass concentration varied from 19.45 ± 1.56 to 44.57 ± 1.84 μg/m^3. The accumulation mode (sub-micron: ra≈0.05 to 0.4 μm) aerosol mass concentration, Ma is found to be minimum (~7 μg/m^3) and maximum (~ 23 μg/m^3) during the months May–June and November–December, 2008-11 respectively. Coarse mode (super-micron: rc≈ 0.8 to12.5 μm) aerosol mass concentration Mc is found to be maximum (~ 18 μg/m^3) during the months of May-June 2008-11. The effect of meteorological parameters on the concentration of Mc and Ma has been studied. The other parameters such as effective radius, number concentration of aerosols derived from the above measurements have been presented and discussed.

RKUNIVERSITY

PP - 94

The Comparative Study of Synthesis of Heterocyclic Based Schiff Base by Various Methods

N. R. Sharma and J. M. Parmar

Department of Chemistry, Maharaja Shree Mahendra Sinhji Science College, Morbi-363642 Gujarat, India
Email ID: sharmanitish48@gmail.com

Abstract

Now a days the chemistry of Benzo [1,3] oxazine moiety enhanced important due to their pharmaceutical and biological activities. In the considering of variety of medicinal actions. It appeared of interest to synthesized some new Benzo [1,3] oxazine derivatives. The synthesis of target molecule was carried out by different methods such as conventional, microwave irradiation and mortar pestle. Further the effect of solvents on synthesis well studied in the present papers. The structural characterization of these synthesized compounds was carried out by different analytical methods such as IR, 1H NMR and mass spectral data.

PP - 95

Antimicrobial Activity of Novel Active Pharmaceutical Ingredients

Ktupali[1] Bhut, Prinsi[1] Kalavadiya, Khushboo[1] Patel, Devanshi[1] Rupareliya, Heena[1] Varan, Govind Soni[2] and Vasant Jadeja[3]

[1]Department of Microbiology, Shree M. & N. Virani Science College, Rajkot, Gujarat, India.
[2]Department of Industrial Chemistry, Shree M. & N. Virani Science College, Rajkot, Gujarat, India.
[3]Faculty, Department of Microbiology, Shree M. & N. Virani Science College, Rajkot, Gujarat, India.
Email ID: kp221970@gmail.com

Abstract

The goal of an activity directed isolation process is to isolate bioactive compounds which may provide structural leads of therapeutic importance. Whereas the traditional process of drug development is long and expensive, simple and rapid bioassays can serve as the starting point for drug discovery. 5-oxo-imidazoline derivatives have been noted as potent therapeutically active antibacterial and antifungal compound. Multiple drug resistance among highly infective microorganisms generates a major obstacle to clinical application in recent years. The non-antibiotic drugs act in different manners on microbial growth. Current work aims at finding the antimicrobial activity of some selected 5-oxo-imidazoline derivatives against selected microbial isolates. 43 5-oxo-imidazoline derivatives were tested against 7 bacterial and 1 fungal isolates. Derivative No. 31, 34, 36, 37, 51, 54 & 102 were found to be most effective against some of the selected bacterial isolates while remaining of the derivatives did not show considerable inhibition of the selected bacteria. *S.aureus* was found to be most susceptible isolated against all the derivatives while *Pseudomonas* and *Proteus* were found to the most resistant. Derivative No. 48 was most effective antifungal chemical, giving largest zone of inhibition against *A.niger*

RKUNIVERSITY

PP - 96

Structural Analysis of Biosurfactants Produced By Marine Bacteria Using Agro-Industrial Waste.

T.P. Musadiya[1], M.M. Khambhara[1], R.R. Popat[1], D.K. Tanna[1], P.L. Jadeja[2] and N.D. Pandhi[3]

[1]Department of Microbiology, Shree M. & N. Virani Science College, Rajkot, Gujarat, India
[2] Department of Microbiology, Shree M. & N. Virani Science College, Rajkot, Gujarat, India
[3]Department of Microbiology, Shree M. & N. Virani Science College, Rajkot, Gujarat, India.
Email ID: musadiyataxashila@gmail.com

Abstract

Total 10 marine bacterial isolates were selected for the present study. All isolates were found to produce gummy colonies with entire margin and capsule. Corn seed cake and cotton seed cake were found to be good carbon source for Biosurfactant production with highest production of 10.8 gm/l and 8.4 gm/l respectively. A study of emulsion efficacy of Biosurfactant was carried out with 6 different tests, namely, Drop Collapse Method, Emulsion Index Method, Oil Spreading Method, Emulsion Activity, Cell Surface Hydrophobicity and Hemolytic Activity. It was found that all samples were positive for drop collapse test, highest emulsion index was found to be 80.33% for isolate WSK-2(3), highest diameter of halo zone in oil spreading method and highest emulsion activity was found to be 66.23 mm and 3.46 respectively for isolate WKN-2, highest cell surface hydrophobicity was found to be 41.55% for KNS-22 and highest zone index in hemolytic activity was found to be 3 for KNW-11. Qualitative analysis of carbohydrates and proteins suggested presence of polymers of glucose, fructose, galactose and aromatic amino acids like tryptophan or histidine in Biosurfactants. UV-Visible spectrum analysis of Biosurfactants disclosed presence of glycoprotein in them. Rf values of thin layer chromatography for Biosurfactants evinced presence of sugars like pentose and hexose, amino acids like aliphatic, aromatic and acidic amino acids and phospholipids.

PP - 97

DNA Barcoding- A Recent Life Identification Technique

Disha S. Doshi, Hemali K. Ramchandani, Aarti J. Godhani, Payal P. Bhalodiya and Priya Magunia

Shree M. & N. Virani Science College, Rajkot, Gujarat, India.
Email ID: dishadoshi11@yahoo.com

Abstract

DNA Barcoding is a recently developed technique that helps to study biodiversity through species level identification. It makes use of a small segment of DNA referred to as a conserved sequence for the organisms of a particular species. As a barcode stores unique informations in the form of bars, DNA Barcode stores unique DNA sequences in the form of barcodes. There are many applications associated with these technique viz. taxonomical studies, phylogenetic evaluation, species identification, detection of invasive species, biodiversity conservation, various diagnostic techniques, etc. These Barcodes can be stored in a Barcode Database like BOLD (Barcode of Life Data System) and can be retrieved when needed. Thus, it's a unique combination of Life Sciences and Bioinformatics.

RKUNIVERSITY

PP - 98

Transesterification of Animal Fats and Animal Oils for Production of "BIODIESEL"

Deepa Sharma, Nidhi Panchani, Anjisha Maharshi, Dhvani Sagar

Department of Microbiology, School of Science, RK University, Rajkot, Gujarat, India
Email ID: deepas.sharma87@gmail.com

Abstract

Non-edible food stock such as waste of animal fat have recently increased in popularity as alternative to that of edible vegetable oil to produce biodiesel. Biodiesel is an alternative fuel which are similar to that of fossil fuels. Biodiesel can be produced from vegetable oil, animal oil, animal fat etc. The process which is used to convert these oils or fats into biodiesel is called transesterification. The biodiesel is usually produced from a wide range of edible vegetable oils which are used for human consumption and the price of these oils are going to increase in future, which is why waste animal fat is to be used for the production of biodiesel. Since these are being produced from waste animal fat is eco-friendly and nontoxic. Biodiesel is biodegradable and is one of the renewable resources. It is pure as well as very efficient. It gives same efficiency as that of petroleum diesel fuels. The exhausts from biodiesel have a less harmful impact on human health than that of petroleum diesel fuels.

PP - 99

Nanoparticles and Its Application in Edible Coating of Fruits

Vasudev Surya, Mayank Kanzariya, Bhavika Turakhia and Sejal Shah

Department of Microbiology, School of Science, R K University, Rajkot, 360020, Gujarat, India
Email ID: sejal.shah@rku.ac.in

Abstract

Nanotechnology can brings the new opportunities for the food packaging techniques, in which we increase the shelf life of the fruits, vegetables and other food products and we can decrease the food spoilage and retard the shortage of food and finally we can spread the good food to human by help of nanoparticles. Fruits and vegetable coated/cover with nanoparticles can warn the consumers about safety of the food products or fruits, we have to replace plastic packaging of food with edible packing with the help of nanotechnology. The current major focus of food packaging with the help of nanotechnology is nanoparticles are acting as hydrophilic and lipophilic group with high antioxidant and bactericidal properties. Nanoparticles can replace the non-biodegradable plastic. Their coating on food can increase the food quality, shelf life and decrease the plastic waste, some food products like bread will spoil in some hour without packaging after backing, we can use inorganic and silver nanoparticles. For coating of nanoparticles, several methods can be utilize for the coating like foaming, dripping, dipping etc. Nanoparticle coating can reduce gas diffusion and inhibit the growth of mould. Nanotechnology applications sounds very good but it is very necessary to find the risk when nanoparticles accumulate in the body.

RKUNIVERSITY

PP - 100

Liquid Biopsy: Circulating Tumor Cells, A New Era for Cancer Diagnosis

Tanzil Juneja, Amisha Patel and Sejal Shah

Department of Microbiology, School of Science, RK University, Rajkot, Gujarat, India.
Email ID: sejal.shah@rku.ac.in

Abstract

"Liquid biopsy" focusing on the investigation of circulating tumor cells (CTCs) and circulating tumor DNA (ctDNA) or cell-free DNA (cfDNA) in the blood of cancer patients. A liquid biopsy is the sampling and analysis of non-solid biological tissue and primarily blood. It is also known as fluid biopsy or fluid phase biopsy. Analyses of CTCs and ctDNA have covered new diagnostic avenues.

We have combined "PubMed" and "Medline" articles published from 2013 to 2018 and retrospective review has been done to detection of cancer. Previous studies suggest that liquid biopsy aid insight into genetic abrasion of all tumor lesions which can track new record in genomics. A liquid biopsy may be used to detect cancer at any stage. It would be helpful for detection of cancer or to assess genetic abnormality without going for surgery or biopsy specimen. The pharmacokinetics or pharmacogenomics study may be performed using liquid biopsy at any stage of the cancer.

Clinical applications of ctDNA and CTCs include detection of cancer and prediction of prognosis in cancer patients. Several studies reported the detection of circulating cell-free miRNAs (cf-miRNAs) in the human serum and plasma and demonstrated their diagnostic and prognostic efficacy. Further studies are warranted to validate ctDNA-based liquid biopsy towards precision medicine and the diagnostic evaluation of cancer.

RKUNIVERSITY

PP - 101

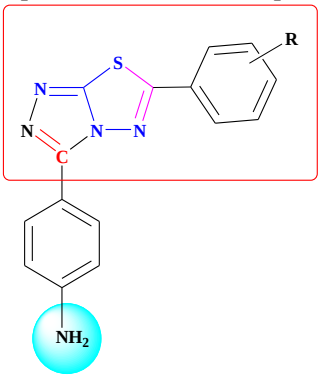
Synthesis and Microbial Evaluation of Terminal Amino Bearing 4-(6-Substituted-[1,2,4]Triazolo[3,4-*B*][1,3,4]Thiadiazol-3-Yl) Benzenamine Derivatives

Aftab Mithan, Jeel Shingala and Chirag Rathod

Department of Chemistry, School of Science, RK University, Rajkot, Gujarat, India.
Email ID: chirag.rathod@rku.ac.in

Abstract

A acid catalyzed reaction for an effective preparation of **4-(6-Substituted-[1,2,4]triazolo[3,4-*b*][1,3,4]thiadiazol-3-yl)benzenamine** derivatives have been described. Single step reaction of 4-amino-5-(4-aminophenyl)-4*H*-1,2,4-triazole-3-thiol and various aromatic acid, which was catalysed by con. H_2SO_4 gives corresponding triazolo-thiadiazol derivatives. Newly synthesized compounds were characterized by different spectral techniques such as IR, PMR, CMR and Mass spectrometry. All the synthesized compounds were endangered to *Invitro* antimicrobial screening against a panel of pathogenic strains of bacteria to appraise their potency. Some of the compounds were found to be equipotent or extra potent than marketable antibiotics against some active strains.



Terminal Amino Group

RKUNIVERSITY

PP - 102

Pollution Control Equipment

Rutvi Bhesaniya and Nensi Koradiya

College of Computer, Science and Information Technology, Gujarat, India
Email ID: rutvibhesaniya00@gmail.com

Abstract

As it is impossible to control pollution everywhere, "Pollution Control Equipment" are used. It helps in the removal of gaseous pollutants from the main gas stream. The pollution control equipment are categorised as 1) control devise for particulate contaminants and 2) control devise for gaseous contaminant. Gravitational setting, Cyclone separators, Fabric filters, Electrostatic precipitators, Wet collectors or scrubbers are included in Control devices for particulate contaminants. Wet absorption method and Dry absorption method are include in Control devices for gaseous contaminants. The Gravitational setting chamber are of long, horizontal, rectangular chambers with an inlet at one end an exit at the side or top the opposite end, they are used to remove large, abrasive particles usually greater then 50mm. Cyclone separators utilized centrifugal force, it consist of a cylinder with a conical base. Bag house filters are fabric filter system that filter out the particulate pollutant and allows the clear gas to pass though. The electrostatic precipitator works on the principle of electrostatic precipitation. Wet collectors or scrubbers remove the pollutants from gas stream by incorporating the particulates into liquid droplets. Nowadays the concentration of pollutants is increasing constantly which causes several side effect to plants, animals and mankind, so it become necessary to keep them in control.

PP - 103

Enhancement of Antimicrobial Activity of Spices Against Multiple Antibiotic Resistant Bacteria

Foram N. Joshi, Priya V. Harsora and Abhijeet Joshi

Shree M. & N. Virani Science College, Rajkot, Gujarat,India.
Email ID: asjoshi@vsc.edu.in

Abstract

An antibiotic is a type of antimicrobial substance active against bacteria and is the most important type of antibacterial agent for fighting bacterial infections. Now a day's pathogens are acquiring resistance to antibiotics by various methods and threaten the life. Natural products can also inhibit the pathogen but their inhibitory power was low. Natural products such as spices have been used in our country cuisines since times immemorial. Their use was mainly due to health benefits as herbs and for the aroma they provided in the food. However, little did we know at that time that these spices also have antimicrobial activity. The current study was based on the combinatory and comparative antimicrobial activity of some spices against two multiple antibiotic resistant Gram positive and Gram Negative bacteria. The combination-1 shows highest activity against both Gram positive bacteria (*S. aureus and Bacillus sp.)* as compared to Gram negative bacteria (*E.coli* and *S. typhi*).

RKUNIVERSITY

PP - 104

Review: Next generation transistor for fast switching applications

Meet Bhatt, Madhavi Kharecha, Gondaliya Bhavika, Krupa Rajpara and Ashish Tanna

Department of Physics, School of Science, RK University, Rajkot-360020(Gujarat, India)
Email ID: mbhatt105@rku.ac.in

Abstract

Modern smartphones and other smart devices, there are billion of tiny transistors available to control the flow of electrons with rapid on-off switching. But there are some limitations for packaging more transistors into smaller device. These can be drawback and results into inefficiency of transistor materials which can cause energy loss, generate heat and shorter battery life. Recently, scientists of BERKELEY Lab US have demonstrated electronic switching in exotic, very thin material that can carry charge with nearly zero loss at room temperature for first time. Researchers have demonstrated this switching when subjecting the material to a low current or electric field. The scientists developed the material from scratch and studied bit with X-RAY at the advance light source. The material is sodium bismuthide (Na_3Bi), known to be a "TOPOLOGICAL DIRAC SEMIMETAL" which has unique electronic properties that can be turned to behave in different ways. It has also considered as next generation transistors.

PP - 105

Applications of Actinomycetes as Antibiotic Producers

Jaydip Sorathiya, Denisha Ajani, Bansi Lakkad, Aniket Chauhan and Sougata Ghosh

Department of Microbiology, School of science, RK University, Rrajkot,360020, Gujrat, India
Email ID: sougata.ghosh@rku.ac.in

Abstract

Multidrug resistant bacteria pose a global threat because they are gaining resistance against most of the antibiotic which are commercially available. Novel actinomycetes are being exploited for discovery of new classes of antibiotics. In this report we have presented an overview of various antibiotic from *Streptomyces* spp. Streptomycin is the most common aminoglycoside which is a broad spectrum antibiotic that is produced by genus *Streptomyces*. Similarity *Streptomyces fradiae*, *Streptomyces kanamyceticus*, *Streptomyces tenebrarious* produce neomycin, kanamycin and tobramycin respectively. Various other antibiotics like chloramphenicol, macrolides, rifamycin, linkomycin, amphotericin, levorin, carbapenem, and thienamycin are also produced by various species of *Streptomyces*.

RKUNIVERSITY

PP - 106

Anti-Biofilm Activity of Silver Nanoparticles Synthesized from *In-Vitro* Grown *Dioscorea bulbifera*

Komal A. Joshi[1], Sougata Ghosh[2] and Aarti Dhepe[1]

[1]Institute of Bioinformatics and Biotechnology, Savitribai Phule Pune University, Ganeshkhind, Pune, 411007, Maharashtra, India
[2]Department of Microbiology, School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: sougata.ghosh@rku.ac.in

Abstract

Dioscorea bulbifera is a true yam species which is famous for its medicinal properties. The plant is reported to possess anti-inflammatory, anti-diabetic and anti-tumerogenic properties. It has also been found that the *Dioscorea bulbifera* tuber extract is effective in synthesizing silver nanoparticles because of its unique phytochemistry. However, the plant is available in the rainy season only hence in this study *in-vitro* system for maintenance of the *Dioscorea bulbifera* was developed using three media combinations namely MS, AN and CU. Aqueous extracts of these *in-vitro* grown plantlets were found to have high contents of phenolics, flavonoids and starch. These extracts were screened for the synthesis of silver nanoparticles and were found to be effective in rapid synthesis of the silver nanoaprticles in 5hrs with the optimum temperature of 50°C and salt concentration equal to 5mM. Fourier Transformed Infrared spectroscopy (FTIR) analysis revealed that the polyols in these extracts are responsible for bioreduction. Silver nanoparticles synthesized from extracts of *Dioscorea bulbifera* were characterized by Transmission Electron Microscopy (TEM) and Dynamic Light Scattering (DLS). Silver nanoparticles from plantlets growing on MS medium were found to have the smallest size and thus showed maximum antibacterial and antibiofilm potential towards *Pseudomonas aeroginosa* and *Vibrio harveyi*. The silver nanoparticles synthesized from the extracts of plantlets growing on AN and CU medium were also found to be effective. The results also suggested the presence of variation in the mechanism of biofilm inhibition by silver nanoparticles against these two bacteria as biofilm inhibition was found to be greater in *Vibrio harveyi*. To best of our knowledge no such study has been done before with the *in vitro* grown *Dioscorea bulbifera*.

RKUNIVERSITY

PP - 107

Antioxidant and Phytochemical Analysis of *Withania coagulans*

Piyush Bharda, Dharti Harkhani, Anjali Trivedi and Nisha Trivedi

School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: anjalitrivedi3110@gmail.com

Abstract

Withania coagulans belongs to family Solanaceae. Medicinal plants have bioactive compounds which are used for curing of various human diseases and also play an important role in healing. Phytochemicals have two categories. (i) Primary constituents and (ii) Secondary constituents. Primary constituents have chlorophyll, protein, and amino acids. Secondary constituents contain terpenoids and alkaloids. The extracts were subjected to qualitative tests for detection of phyto-constituents present in it alkaloids, carbohydrates, glycosides, phenolic compounds & tannins, steroid & terpenoid, proteins, saponin and carbohydrate. Medicinal plants have bioactive compounds which are used for curing of various human diseases and also play an important role in healing. It has been found that mainly in Punjab, the fruit of *W. coagulans* are used as the foundation of coagulating enzyme for clotting the milk which is called Paneer. *Withania coagulans* was studied for its antioxidant activity. The antioxidant activity of *Withania coagulans* was studied by DPPH and it was observed that it has antioxidant activity. It showed more activity in DPPH method. This has necessitated an investigation for new antimicrobial substances from other sources counting plants. The fruits are diuretic, hypoglycaemic and hypolipidemic. The aqueous extract of fruit of *Withania coagulans* contained alkaloid, glycosides, amino acid, steroids, flavonoid, terpenoid, saponin, tannin were present or absent were analysed.

PP - 108

Extraction and Characterisation of Antimicrobial Compounds of *Withania coagulans*

Mayur Parmar, Dharti Harkhani, Anjali Trivedi and Nisha Trivedi

School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: anjalitrivedi3110@gmail.com

Abstract

Withania coagulans is used to cure various ailments and used in folk-medicine. *Withania coagulans* commonly known as Indian cheese maker has been used for preparing a vegetable rennet ferment for making cheese in different parts of India. In Northern India traditional healers use dry fruits of *Withania coagulans* for the treatment of diabetic patients. The traditional healers use primarily water as the solvent, but plant extracts prepared with different solvents provided more consistent antimicrobial activity as also reported earlier, so the four extracts of fruit of *Withania coagulans*(Fruit) showed good inhibitory activity against all the pathogens tested. There are numerous reports in the literature concerning the antimicrobial activity of crude extracts prepared from plants. Therefore, it is sensible to wait for a selection of plant compounds with exact general antimicrobial activity. The basic aim of Ayurveda is maintenance of health and treatment of various diseases. Medicinal plants have many reported activities such as antifungal, antibacterial and anti-inflammation activities and many others. They showed very little antimicrobial activity against Gram positive, Gram negative bacteria and fungi. They showed good antifungal activity against clinically isolated fungal strains.

RKUNIVERSITY

PP - 109

Dielectric Study of Strontium Tartrate Nano Particles

U. M. Lathiya[1], G. M. Joshi[2], P. M. Vyas[3], K. R. Rathod[4], H. O. Jethva[1] and M. J. Joshi[1]

[1] Crystal Growth Laboratory, Department of Physics, Saurashtra University, Rajkot, 360005, Gujarat, India
[2] Department of Engineering Physics and Engg. Materials, ICT- Mumbai – Marathwada Campus, Aurangabad Road, Jalna, 431203 Maharashtra, India
[3]Physics Department, Kamani Science College, Amreli, 365601, Gujarat, India.
[4]School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: urvi.tarpara@gmail.com

Abstract

Strontium tartrate is an important ferroelectric material and non-linear optical material with device application in single crystalline form. However, no major work is reported on strontium tartrate nano-particles. In the present study, strontium tartrate nano particles are synthesized by wet chemical method. The powder XRD suggests the monoclinic nature of the strontium tartrate nano-particles and the unit cell parameters are: a = 7.54Å, b = 10.05Å, c = 6.46Å and α = 90o, β = 102o, γ = 90o. The average crystallite size is calculated using Scherrer's formula and is found to be 40 nm. The dielectric study is carried out on pelletized samples in the range from 10 Hz to 10 MHz at various temperature from 303K to 373K. The dielectric constant and dielectric loss decreases with frequency increases. The A.C. conductivity increased with increasing frequency. The Jonscher's power law is studied for A.C. conductivity and from the values of parameters A and n the CBH mechanism is found to be prevailing for the A.C. conduction. The activation energy for electrical conduction is decreasing with increasing frequency.

PP - 110

Synthesis, Antimicrobial and Anticancer Scrrening of Chalcones from 3-Acetyl Coumarin

Sai Pranathi P., Khushal Kapadiya, Deva Muchhal, Shudra and Yagnesh

School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: saipranathi.patimalla@rku.ac.in

Abstract

Chalcones are well known for being intermediates for the synthesis of many heterocyclic compounds are also known for their biological activities. Coumarins, which are mostly found to be a part of most of the natural products have been identified to be of considerable importance due to their biological and pharmaceutical activities. Based on the importance of these classes of compounds we have synthesized a series of chalcones from 3-acetyl coumarin. The synthesized compounds were tested for antimicrobial activities against *E. coli* and *B. subtilus* bacteria; and *A. niger* fungi. The compound D4 was found to be most efficient against both the species of bacteria whereas it was observed that none of the compounds were effective against the fungi *A. niger*. The compounds D2, D4 and D5 were tested for anticancer activities. The compound D5 was found to be moderately active against the CNS cancer and renal cancer cell lines, D4 was found to be moderately active against the small cell lung cancer and the compounds D4 and D2 were found exhibit relatively good activity against renal cancer cell lines. The reaction was monitored by TLC and the compounds were characterized by GC MS and ^{1}H NMR.

RKUNIVERSITY

PP - 111

Medicinal uses of *Bauhinia variegate*

Nisha Trivedi, Hemanshi Dhaduk, and Hemangi Vaghela

Department of Microbiology, School of Science, RK University, 360020, Gujrat India
Email ID: hdhaduk339@rku.ac.in

Abstract

Bauhinia variegata is a species of flowering plant in the family Fabaceae. It is a small to medium sized tree growing to 10-12m tall, deciduous in the dry season. It is native to South Asia and Southeast Asia, from Southern China, Burma, India, Nepal, Pakistan and Srilanka. The leaves are 10-20cm obcordate shaped, long and broad, rounded and bilobed at the base and apex. The flowers are conspicuous, bright pink or white, 8-12cm diameter, with five petals. It is grown as ornamental tree in gardens and along the roadsides. *Bauhinia* is known by serval vernacular names such as Kachnar, Kanchan, Sihappu mantarai, Mountain Ebony, Kovidar, etc. It is very popular and beautiful tree. Kachanar tree is one of the most important herb in Ayurvedic medicine system. *Bauhinia* tree parts have Anti-bacterial, Anti-fungal, Anti-malarial, pain reducing, swelling reducing, cytotoxic, fever reducing and thyroid hormones regulating properties. In Ayurveda, the tree is used extensively for treating skin and glandular disease, leprosy, intestinal worms, tumors, wounds, ulcers, inflammation, scrofula, protoptosis, haemorrhoids, haemoptysis, cough, menorrhagia and bleeding disorders. It is considered best for treating disease of lymphatic system and glands. Ayurvedic medicine, Kanchanar guggulu is used in treatment of hypothyroidism.

PP - 112

Parkinson's Disease

Nisha Trivedi, Janki Nasit, Urvisha Gohil, Hansika Solanki and Arti Jamod

Department of Microbiology, School of science, RK University,
Rajkot, 360020, Gujarat, India
Email ID: hsolanki992@rku.ac.in

Abstract

A disease that gets worse over a period and causes the muscles to become Weak and the arms and the legs to shake. Parkinson’s disease is caused by the death of certain nerve cells in the brain that produce Dopamine. Parkinson’s disease symptoms include tremors and changes in speech and gait, leads to shaking, stiffness and difficulty with walking, balance and. Genetic and environmental factors involved. It can not be cure but symptoms can be treated by surgery, gene therapy. In a treatment are helpful relieve medication, diet advise. like Exposure to chemicals in the environment might play a role. Some research has shown that caffeine which is found in coffee, tea & Cola may reduce the risk of developing Parkinson's disease.

RKUNIVERSITY

PP - 113

Introducing Gene Therapy by Using Stem Cells

Dhvani B. Jani , Trupti Marakana, Bansuri Gami, Shruti Kansagara and Heta Kansagara

Department of Microbiology, School of Science, RK University,
Rajkot-360020, Gujarat, India
Email ID: djani278@rku.ac.in

Abstract

Stem cells are type of cells that can produce other cells in human body. They make specialized cells that make-up the different types of tissue in the human body. They are characterized by the ability to renew themselves through mitotic cell division and differentiating into a diverse range of specialized cell types. It has ability for continue proliferation. Stem cells have many types of characteristics like totipotency, telomerase activity etc. Two important characteristics that distinguish them from other types of cells. This ability allows them to replace cells that have died. By this they are used in replace defective cells in patient. That is the main advantage of stem cells. The knowledge of stem cell biology has opened the therapeutic usage of stem cell in the form of neuron regeneration, drug testing, bone defect, gene therapy and cell based therapy in the form of muscle damage, spinal cord injury, cancer therapy etc. Stem cells used in experimental gene therapies. By this presentation we introduce the stem cells techniques that can overcome the major diseases and regenerative cells.

PP - 114

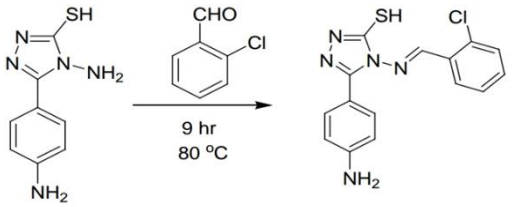
An Expedient of Azomethine Derivatives of Triazole

Trupti Varmora and Chirag Rathod

School of Science, RK University, Rajkot, 360020, Gujarat, India
Email ID: chirag.rathod@rku.ac.in

Abstract

A series of novel Schiff base 2a-e containing Triazoles nucleus and its derivatives have been synthesized. The Schiffbase2a-e was prepared by the condensation of N aminotriazole with various aldehyde in acidic condition and ethanol as a solvent. The structures of the new synthesized compounds were characterized based on 1H-NMR, Mass, IR and elemental analysis data.



RKUNIVERSITY

PP - 115

Tender Cocount Water (Cocos Nucifera Linn): Hidden Health Risk to The Consumer

Jyoti Nayak, Komal Vadhavaniya, Sejal Shah and Bhavika Turakhia*

Department of Microbiology, School of Science, R K University, Rajkot, 360020, Gujarat, India
Email ID: bhavika.waghela@rku.ac.in

Abstract

Coconut water is world's natural refreshing drink which have antioxidant, anti-diabetic properties. Moreover, coconut water can also prevent kidney stones, reduce blood pressure and it is a good source of hydration. Coconut water is rich in potassium, vitamin C, magnesium, sodium, calcium and different types of proteins. Nowadays, consumers prefer to have coconut water packed in plastic bags for later consumption, and it favors high risk of bacterial contamination. Because it support the growth of bacteria to high and infective load of viable cell. From the review of literature, it was found that *Escherichia coli* and *Klebsiella pneumonia* types of microorganisms that degrades the nutrients which is present in coconut water. Previous study suggests that *E. coli* and *K. pneumonia* may be well-grow in Luria-Bertini (LB) broth as a control. They have the side effects as *E. coli* can cause intestinal sickness called Shiga-toxin producing *E. coli* (STEC) (serotype 0157:H7) after the toxin that they produce. This strain is pathogenic and able to cause serious health problem to human. *K. pneumonia* can cause alcoholism, cancer, diabetes, kidneys failure, lung disease. It basically effects our brain, blood, skin, urinary tracts. So, we recommend people to consume fresh coconut water because it has many therapeutic value as it exhibits Hypoglycemic, and antioxidant potential in experimental diabetes. Therefore, public should be aware and always practice proper food handling.

PP - 116

Green Synthesis: An Approach Towards Biomedical Applications

Bhumika Bhayani, Nehal Kathiriya and Swati Goswami

Department of Microbiology, SOS, RK. University, Rajkot, Gujarat, India
Email ID: Swati.goswami@rku.ac.in

Abstract

Green synthesis is an approach towards synthesis of nanoparticles using biological system including different macro–microscopic organisms such as plants, bacteria, fungi, seaweeds and microalgae. The attention towards plants for nanoparticle synthesis has been diverted due to its eco -friendly, single step, less side effect and economical advantages. The synthesised nanoparticles have wide range of biomedical application with potential remedy for various diseases such as malaria, cancer, HIV, hepatitis and other acute and endemic diseases. The plants are used successfully in the synthesis of various greener nanoparticles such as, gold, palladium, copper, silver, platinum, cobalt, magnetite and zinc oxide. Plant contains abundant secondary metabolites such as alkaloids, saponins, flavonoids, steroids, tannins which add on to the existing potential acting as reducing and stabilizing agents for the bioreduction reaction to synthesized novel metallic nanoparticles.

RKUNIVERSITY

PP - 117

Synthesis, Characterization and Biological Evaluation of 3-nitro 4-Substituted Coumarin Derivatives as Antimicrobial Agents

Mayur K. Shiyal[1], Anilkumar S. Patel[2], Khushbu K. Dodeja[1] and Yogesh T. Naliapara[1]

[1]Department of Chemistry, Saurashtra University, Rajkot, Gujarat, India
[2]Shree M. & N. Virani Science College, Yogidham Gurukul, Kalawad Road, Rajkot, Gujarat, India
Email ID: Shiyalmayur76367636@gmail.com

Abstract

A series of 3-nitro-4-substituted coumarin were prepared by the reaction of 4-bromo-3-nitro coumarin with different ammines. The newly synthesized compounds were characterized by using IR, Mass, ^{1}H and ^{13}C NMR spectroscopy which were further screened for *in vitro* antimicrobial activity against four human pathogenic bacteria viz., *E.coli*, *P. Aeruginosa*, *Kl. Pneumoniae*, *S.aureas*, and one antifungal *P. Marneffei* species.

PP - 118

Probiotic Bacteria and Function

Chauhan Mehul R and Gori Afzal D.

Department of Microbiology, school of science, RK University, Rajkot
Email ID: agori436@rku.ac.in

Abstract

In the recent scenario, the changing lifestyle of humans leads to many health issues. To resolve these issue, better lifestyle should be adopted along with use of probiotics in routine which is likely to improve the health. As per WHO, Probiotics are the live microorganisms which when administered in adequate amount confer health benefit for the host. The potentially beneficial bacteria are called probiotics**.** Most commonly used bacteria (probiotics) include lactobacillus and bifidobacteria. The organisms are the lactic acid bacteria, commonly used in fermented dairy products. Some uncertainty still exists with beneficial application of probiotics in other diseases with regard to the therapeutic role, strain-specificity, dosage and duration. Define of clinical characteristics of effective probiotic strains, their mechanisms of action and testing of probiotic-based treatment may provide the true beneficial effect of probiotics in various disorders. The identification techniques of microorganisms as potential probiotics includes genetic fingerprinting, gene sequencing, oligonucleotide, probes and primer selection molecular methods such as denaturing gradient gel electrophoresis and fluorescence “in situ” hybridization. The use of fermented dairy product and increased recognition of the beneficial effect of probiotics on human gut health has lead to escalated application of these bacteria in medical conditions. According to FAQ or UN & WHO. The yeast Saccharomyces boulardii has also to have health benefits.

RKUNIVERSITY

PP - 119

Plastic Degradation

Vadavariya Samim S and Parvez Khan I. Pathan

Department of Microbiology, school of science, RK University, Rajkot, Gujrat, India
Email ID: ppathan068@rku.ac.in

Abstract

With increasing global consumption and their natural resistance to degradation, plastic materials and their accumulation in the environment is of increasing concern. This review aims to present a general overview of the current state of knowledge in areas that relate to the biodegradation of polymers, especially poly (ethylene terephthalate) (PET). This includes an outline of the problems associated with plastic pollution in the marine environment, a description of the properties, commercial manufacturing and degradability of PET, an overview of the potential for biodegradation of conventional polymers and biodegradable polymers already in production.

PP - 120

Review: Next Generation Transistor for Fast Switching Applications

Meet Bhatt, Madhavi Kharecha, Gondaliya Bhavika, Krupa Rajpara, Nisha Solanki and Ashish Tanna

Department of Physics, School of Science,
RK University, Rajkot, 360020, Gujrat, India
Email ID: mbhatt105@rku.ac.in

Abstract

Modern smartphones and other smart devices, there are billion of tiny transistors available to control the flow of electrons with rapid on-off switching. But there are some limitations for packaging more transistors into smaller device. These can be drawback and results into inefficiency of transistor materials which can cause energy loss, generate heat and shorter battery life. Recently, scientists of BERKELEY Lab US have demonstrated electronic switching in exotic, very thin material that can carry charge with nearly zero loss at room temperature for first time. Researchers have demonstrated this switching when subjecting the material to a low current or electric field. The scientists developed the material from scratch and studied bit with X-RAY at the advance light source. The material is sodium bismuthide (Na_3Bi), known to be a "TOPOLOGICAL DIRAC SEMIMETAL" which has unique electronic properties that can be turned to behave in different ways. It has also considered as next generation transistors.

RKUNIVERSITY

PP - 121

Investigations on Resistive Switching Behavior of $La_{0.75}Na_{0.25}MnO_3$/Nb-$SrTiO_3$ Device

Ajay Vaishnani, K.N. Rathod, V.G. Shrimali, Khushal Sagapariya, Bhagyashree Udeshi, Himanshu Dadhich, Bharavi Hirpara, P.S. Solanki and N.A. Shah

Department of Physics, Saurashtra University, Rajkot, 360 005, Gujarat, India
Email ID: snikesh@yahoo.com

Abstract

Since last two decades, Resistive Switching (RS) and its mechanisms have been studied interestingly for manganites and titanates. In the present communication, we have synthesized epitaxial 2-D nanosized thin film of $La_{0.75}Na_{0.25}MnO_3$ (LNMO) using pulse laser deposition (PLD) technique on the single crystalline substrate Nb-$SrTiO_3$ (SNTO) having *(1 0 0)* orientation. In order to understand RS behaviour exhibited by the presently studied LNMO/SNTO interface, I-V hysteresis curve has been performed between -X to X volt (X = 0.2, 0.4, 0.8, 1.0 and 1.2). Backward Diode characteristics have been observed along with RS behavior, which explores the potential applications. Under the UV-Visible radiation environment, modifications in RS behaviour have been observed. Due to this, device also works as optical sensor. For studying varicap behavior of thin film, speed of taking data was raised, due to which higher current response at interface takes place. Presently studied thin film is also useful as READ-WRITE heads, sensors, data storage device, etc.

PP - 122

Synthesis and Antimicrobial Activity of *N*-(piperidine-1-carbonothioyl) Benzamide Derivatives

Namrataba Khadiya, M.V.Modhvadiya, Y.T. Naliapara and Dhananjay Pandya

Dept. of chemistry, Shri M.M. Science college, Morbi-363642, Gujarat, India
Email ID: namigadhvi9@gmail.com

Abstract

Derivatives of N-(piperidine-1-carbonothioyl) benzamide were synthesized by using benzoic acid derivatives and piperidine. The structures of new synthesized compounds were confirmed by the spectral data and elemental analysis. All the compounds were screened for their antimicrobial and antifungal activities.

RKUNIVERSITY

PP - 123

Application and recent trends in Augmented Reality

N. R. Merja[1], A. S. Fefar[1], N. B. Paija[1] and B. M. Sharma[2]

[1]Shri M.P. Patel B.Ed. & Science College-Jodhpar(Nadi), Gujarat, India,
[2]M. M. Science College-Morbi, Gujarat, India
Email ID: nikunjmerja120@gmail.com

Abstract

Augmented reality (AR) refers to computer displays that add virtual information to a user's sensory perceptions. Most AR research focuses on see-through devices, usually worn on the head that overly graphics and text on the user's view of his or her surroundings. In general it superimposes graphics over a real world environment in real time. Getting the right information at the right time and the right place is key in all these applications. Personal digital assistants such as the palm and the pocket PC can provide timely information using wireless networking and global positioning system (GPS) receivers that constantly track the handheld devices. But what makes Augmented Reality difference is how the information is presented not on separate display but integrated with the user's perception. This kind of interface minimizes the extra mental efforts that a user has to expend when switching his or her attention back and forth between real-world tasks and computer screens. In augmented reality, the user's view of the world and the computers interface literally become one.

PP - 124

Structural and Electrical Properties of ZnO based particle-matrix Composite

Himanshu Dadhich, Alpa Zankat, Hardik Gohil, N. A. Shah, P. S. Solanki*

Department of Physics, Saurashtra University, Rajkot-360 005, Gujarat, India
Email ID: piyush.physics@gmail.com

Abstract

In this study, we have investigated the structural and electrical properties of ZnO micronsized matrix and TiO_2 nanoparticles based ZnO:TiO_2 composite materials. High quality matrix was commercially purchased with high purity whereas TiO_2 was chemically synthesized by low cost sol-gel method. XRD was performed on pure ZnO micronsized matrix and 50-50% weight ratio based ZnO:TiO_2 composite and obtained results depict that XRD of ZnO is in its single phasic nature whereas structural phase coexistence has been identified from the XRD pattern of the composite. Electrical behaviours (including dielectric, impedance and conductivity) have been investigated as a function of frequency at room temperature. Dielectric and impedance have been found to decrease whereas conductivity gets enhanced with frequency for both the samples. Upon the addition of TiO_2 with 50% weight based composite shows an improvement in all the three electrical behaviours which has been discussed in detail in the present study. Various theoretical models have also been employed to identify possible responsible mechanisms for dielectric and conductivity behaviours and their observed alternations due to an addition of nanoparticles of TiO_2 in the ZnO micronsized matrix.

RKUNIVERSITY

PP - 125

Resistance and Electroresistance Behaviours of $La_{0.7}Ca_{0.3}MnO_3$: $LaMnO_3$ Composites

Hardik Gohil[1*], Hetal Boricha[1], Bhargav Rajayaguru[1], Keval Gadani[1], K.Asokan[2], N.A.Shah[1], P.S.Solanki[1]

[1]Department of Physics, Saurashtra University, Rajkot – 360 005, India
[2]Inter University Accelerator Center, Aruna Asaf Ali Marg, New Delhi – 110 067, India

Email ID: piyush.physics@gmail.com

Abstract

In this communication, we report the results of the studies on nano-micro particles-matrix composites consist of two different stoichiometric manganites having different weight ratios. Constituents of the composites $La_{0.7}Ca_{0.3}MnO_3$ (LCMO) and $LaMnO_3$ (LMO) manganites were prepared by solid state reaction route and sol-gel technique, respectively. Micronsized LCMO was employed as matrix whereas nano particles of LMO were used as filler particles. Pure LCMO matrix and three composites (having LMO 10, 20 and 30% weight contents) were characterized by X-ray diffraction (XRD) and temperature and current dependent resistance measurements. XRD reveals a good quality of the samples. Resistivity was performed under hysteretic (cooling and warming) cycle based protocols under two different current values, i.e. 0.5 and 1.0 mA. Variation in resistivity and electronic phase transistor temperature (T_P) with measurement protocol performed (cooling or heating), applied current (0.5 or 1.0 mA) and content of LMO particles (0, 10, 20 or 30%) has been discussed on the basis of phase separation scenario. Various theoretical models have been employed to understand the charge conduction mechanism responsible for metallic and insulating (semiconducting) nature of the samples. Voltage independent resistance was also performed to understand the electroresistance behaviour of the samples understudy.

PP - 126

Rapid four-component reactions in water: synthesis of pyranopyrazoles catalyzed by ammonium chloride

M. H. Chauhan[a], G. G. Dubal[b] and V. H. Shah[a]*

[a] *Department of Chemistry, Saurashtra University Rajkot-360005, India*

[b] *School of Science, Department of Chemistry, RK University, Rajkot (Gujarat) India*

Abstract:

An environmentally benign synthesis of Pyranopyrazoles derivatives has been developed by a four-component reaction between aldehyde, malononitrile, hydrazine hydrate and ethyl acetoacetate in the presence of ammonium chloride in water medium. This method follows the principle of green chemistry by using environmentally benign synthetic method along with use of ammonium chloride as a catalyst and green reaction medium.

Keywords: Green reaction, Pyranopyrazoles, Ammonium chloride, Aqueous medium.

RKUNIVERSITY

PP – 127

SYNTHESIS AND BIOLOGICAL SCREENING OF 6-ARYL-3-(4-ISOPROPYLPHENYL)-[1,2,4]TRIAZOLO[3,4-*b*][1,3,4]THIADIAZOLES.

Kaushik Joshi and Harsh Pandya

DKV Arts and Science College, Jamnagar, Gujarat, India.

harsh.pandya1327@gmail.com

Abstract

Thiadiazole derivatives are associated with broad spectrum of biological activities.1,3,4-thiadiazole nucleus is therapeutically interesting drug candidate as antifungal and antimicrobial. Thiadiazoles have been prepared by cyclocondensation of 1-amino-3-[4-(propan-2-yl)phenyl]-1*H*-1,2,4-triazole-5-thiol with different aromatic acids in the presence of $POCl_3$. The constitution of newly synthesized compounds have been supported by using elemental analysis, infrared and ^1H nuclear magnetic resonance spectroscopy and further supported by mass spectrometry. Purity of all the compounds have been checked by thin layer chromatography.

Keyword: 1,3,4- Thiadiazole; antimicrobial activity; antifungal

RKUNIVERSITY