Lok Jagruti Kendra University
University with a Difference

ANNUAL RESEARCH REPORT (2024-25)

Foreword

To fulfill the University Vision of emerging as a 'Research Driven Teaching University', The Directorate of Research is contributing a great deal to realise it. The Directorate is growing from strength to strength spanning its activities to capacity building of faculty and students alike. This year surpassed all the earlier records of publication, patents, and quality of papers. With this background, I am pleased to present the Annual Report 2024-25 of the Directorate of Research to update you on the research and publication related achievements of our faculty and students. This year, we've broken all previous records for publications, patents, and the overall quality of our scholarly work. It is with this momentum that I am proud to share the Annual Report 2024-25 from the Directorate of Research, which details the significant achievements in research and publications by our faculty and students. Our research endeavours show clear signs of progress, and we are seeing the fruits of our labor. Our ambitious goal is to reach an average publication rate of at least two research papers per faculty member each year. I want to extend my compliments to the entire Directorate of Research, and especially to Dr. Priya Shah, for their unwavering dedication in putting together this comprehensive report.

This year, like the earlier years, has been quite productive, with 74 papers and case studies indexed in reputed, referred journals like Scopus, ABDC and Web of science. While all our Schools have been making efforts to publish in reputed journals, I would like to highlight the exceptional performance of the School of Pharmacy, School of Management Studies, School of Engineering, and School of Applied Sciences. I hope, schools will soon join the race. Our well-crafted Research Policy provides significant incentives for research and publication. This year, a total of over Rs. 10 lakh 33 thousand worth incentive was awarded to faculty members who published their research or got patents. I would like to make special mention that four of our faculty members published five papers each within this academic year, while another 11 published three papers each. It is quite commendable. My heartiest congratulation to these intense researchers. Congratulations to all the faculty members who have published or submitted their work for publication. Your potential for future research success is immense. This year, various schools within the University organised five national and international conferences and six workshops on a range of contemporary topics.

Cutting-edge research often leads to ground-breaking innovations. This year, I want to recognize our innovative faculty and students who were awarded eight patents. To further cultivate a culture of innovation among our students, the university provided grants totalling over Rs. 17 lakh to 16 students to support their innovative pursuits and passion. Our Incubation Centre has been actively nurturing innovative ideas. This year, 20 startups were matured and funded, in addition to seven preincubated student startups. A total of nine startups applied for patents. This year, the Incubator organised 17 capacity building events and five funding events, and successfully raised an impressive Rs. 1.62 crore for its incubatees. In line with the New Education Policy 2020, over 6,000 students were sensitised on entrepreneurship. Furthermore, the Incubator provided funding support of about Rs. 40 lakh to three high-potential incubatee startups. One of the notable companies that received Rs. 20 lakh in funding was Kimana Motors Pvt. Ltd., an automotive aggregator with a very interesting and unique business model.

Overall, the year concluded with a palpable sense of enthusiasm and optimism for the future. Our faculty members have demonstrated a firm commitment to research. I am confident that the momentum we have built will significantly drive our research endeavours significantly in the days to come.

Prof. Dinesh Awasthi
Vice Chancellor, LJK University

Executive Summary

The year 2024-25 has been a remarkable period in the journey of LJK University toward becoming a truly research-driven teaching institution. Our faculty and students have demonstrated outstanding commitment and achieved significant milestones, marking a new high in scholarly productivity and innovation.
Over the course of this year, the University recorded 74 research publications indexed in reputed databases like Scopus, ABDC, and Web of Science, covering diverse fields from pharmacy and engineering to management and applied sciences. Notably, the Schools of Pharmacy, Management, Engineering, and Applied Sciences led this progress, together contributing the majority of high-quality research outputs. Encouragingly, several faculty members achieved multiple publications, with four publishing five papers each and eleven publishing three papers each.

Recognizing these scholarly contributions, the University disbursed a total of ₹10.33 lakh in research incentives across schools, fostering a culture that values rigorous academic work and motivates further exploration.
Innovation remains a core focus. Through our dedicated incubation centre, 20 startups reached maturity and received funding support, while seven additional student startups were supported at the pre-incubation stage. The incubator's efforts yielded a total fund of approximately ₹1.62 crore, highlighting LJK University's role as a catalyst for entrepreneurship and real-world impact. This was complemented by the university's drive to sensitize over 6,000 students to entrepreneurship, equipping the next generation with the tools to innovate and lead.

The year was further distinguished by the grant of eight new patents, underscoring the practical outcomes of our research endeavours. Substantial funds were also made available to promising student projects, with ₹17 lakh awarded to 16 innovative student-led initiatives.
Across disciplines, our researchers participated actively in knowledge dissemination, with the organisation of five national and international conferences and six focused workshops, creating vibrant platforms for exchange and capacity building.
The University remains steadfast in pursuing its goal of fostering an environment where each faculty member averages at least two research publications annually, and where academic rigor translates seamlessly into societal benefit.

Team Directorate of Research

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ORIENTATION

Our Vision and Mission

Vision

Igniting a culture of research that informs teaching, learning, and growth while empowering exploration and innovation.

Mission

Promoting research excellence across disciplines to ensure a balanced blend of teaching, research, and innovation. Fostering a research culture that inspires students, encourages publication in top journals, and addresses societal concerns.

Research Council Members

Prof. Dinesh Awasthi (Vice Chancellor and Chairman)

Prof. Rakesh Basant (Former Professor, IIM, Ahmedabad)

Prof. Ashwani Kumar (Professor, TISS, Mumbai)

Dr. Viral K Shah (Dean, Faculty of Commerce & Executive director, LJK Trust)

Prof. Pramod Kumar Mehta (Professor Emeritus)

Prof. Y. K. Agrawal (Professor Emeritus)

Dr. Priya Shah (Director, Directorate of Research)

Dr. Shreeraj Shah (Director, School of Pharmacy)

Prof. C.H. Pathak (Honorary Director, Entrepreneurship & Family Business)

Dr. Siddarth Singh Bist (Director, School of Management Studies)

Ar. Himanshu Thakkar (Director, School of Architecture, Planning & Design)

Shri Alok Manke (Director, Institute of Computer Application)

Shri. Mahesh Kella (Director, L.J. Polytechnic)

Dr. P. Danasekaran (Director, School of Physiotherapy)

Dr. Prexa Parikh (Director, School of Engineering & Technology)

Dr. Rashi Goplani (Director, School of Event Management)

Dr. Divya Soni (Director, School of Media & Communications)

Dr. Richa Mandan (Director, Integrated MBA)

Dr. Chaitali Jani (Director, School of Law)

Dr. Nirmal Sahay (Adjunct Professor, School of Applied Sciences)

Dr. Dilip Maheshwari (Director, Pharmacology, School of Pharmacy)

Dr. Niketan Deshmukh (Director, School of Applied Sciences)

Shri Minesh Shah (Registrar & Member secretory, LJK University)

Dr. Manish Shah, President, LJK University, Permanent Special Invitee

RESEARCH ECOSYSTEM

Research at LJK University

Number of Publications	Research Papers	Book Chapters	Case Studies	Conference Proceeding Papers	Total
Publication Category	60	11	02	01	74

IVEY Publishing					1
ABDC & Scopus					
A*	Q1-1				1
A Category	Q1-1				1
B Category	Q2-1	Q3-1			2
C Category	Q3-1				1
Scopus + Web of Science	Q1-9	Q2-21	Q3-7	Q4-2 Indexed	40
Only Scopus	Q2-1	Q3-2	Q4-8	Indexed	25
Only Web of Science	Q3-1			Indexed	2
UGC					1
Total					74

(ii) Institute wise Bifurcation of Research Incentive

(Indexed in Scopus, Web of Science, ABDC, ABS)

Name of School	Institute wise Incentive (Amount in ₹)	Total Incentive (Amount in ₹)
School of Pharmacy		
L J School of Pharmacy	3,84,348	3,84,348
School of Management		
L J School of Management	2,73,000	2,75,100
L J School of Event Management	2,100	
School of Engineering and Technology		
L.J. Institute of Engineering and Technology	1,09,284	1,30,787
New LJ School of Engineering and Technology	10,417	
Diploma Engineering (LJ Polytechnic)	11,086	
School of Applied Sciences		
L J School of Applied Sciences	85,834	85,834
School of Physiotherapy		
LJ Institute of Physiotherapy	3,334	3,334
Copyright and Patents Granted		40,000
Distinguished Researchers Awards		99,000
Special Recognition: Central Government Grant(ICSSR)-Funded Research Award		15,000

Total Research Incentive **₹ 10,33,403**

Innovation at LJK University

Antrapreneur- The Business Incubator

Snapshot of Antrapreneur

Matured Startups Incubated and funded	20
Student startups Preincubated	07
Innovations by Pharmacy Students	09
Capacity Building Events organised	17
Funding Events Organised	05
Government and other scheme associated	07
Total funds raised for startups	1.62 Cr
Entrepreneurs Sensitised	6000+
Patents Applied	09
Incubated startups active in the ecosystem	22
Academic Institutions associated with the Incubation centre	32
Life sciences/Pharma/Biotechnology or related segment startups supported till date	10
Industry MoUs executed	03

Matured Startups Incubated and Funded

Name of the Startup	Domain of Startup	Funds Supported (Amount in ₹)
Kimana Motors Pvt. Ltd.	Automotive aggregator	20,00,000
Swachhai Technologies Pvt. Ltd	Cleantech	15,00,000
Achuk Environmental Solutions Pvt. Ltd.	Environmental care	4,25,000

Name of the Startup	Domain of Startup
Hyperlab Sportech Private Limited	Sportstech
Radical Techart Solution Private Limited	Industrial Tech
Future Technologies	AI
Sports Wale	Sportstech
The Society Clinic	Community Health
A B MY Sports	Tournament Management
Dum Yum Chocolates	FMD
11Za	CRM
Mepass	Event ticket digitizing
Optipro	CRM
Shoppal	CRM
Raveagle	Dronetech
Clover CARTE	Manufacturing
Anuruchi Cosmetics	Teenage Wellness products
Supfull	Health supplements
ZORB-IT!	Cleaning products
Earthshashtra	Sustainable Products

Student Startups Preincubated

Title of Project	Funding Amount	Name of Students	Brief
Mealpe	₹ 2,00,000	Maharsh Shah	A platform which provides food for the modern workplace by connecting them to the nearby corporate cafeterias.
Avinya	₹ 2,00,000	Jenil Gandhi	A completely plant-based leather manufacturing startup which turns food waste like rice, wheat husk and even sugarcane waste into leather.
Citynect	₹ 2,00,000	Hemant Solanki	A platform that connects flatmates. If someone is looking for a flatmate, then city connect is the only destination.
Ecobaccha	₹ 50,000	Shubham Chawla	A sustainable and eco-friendly kids apparel brand which used everything organic from dies to cloth for manufacturing of kids clothes.
Helptag 365	₹ 2,00,000	Harmit Godani	A simple tag that helps strangers locate the owner of a car if it is wrongly parked or needs urgent attention. It simple, safe and secure.
Digital wedding	₹ 10,000	Jay Gosai	A startup that specializes into creation of cost-effective 3D invites for every occasion.
Automatic water management system	₹ 75,000	Raj Gosai	A solution for automatic supply of water for a society or a premise like LJ where there are multiple buildings and each one of them has its own overhead tank.

Funded Projects

Title of Project	Funding Amount	Name of students	Name of Mentors
Development of polymeric Nanocomposite-Based formulation of Dolutegravir Sodium with herbal Efflux inhibitor	₹ 1,00,000.00	Aditi Gupta Satishbhai	Dr. Kaushika Patel
Formulation development and evaluation of transferosomes assisted drug delivery for treatment of skin cancer	₹ 1,00,000.00	Safan Kariyaniya	Dr. Jaymin Patel
Formulation and evaluation of Prochlorperazine maleate loaded Nanostructured Lipid carriers for treatment of schizophreniar	₹ 1,00,000.00	Maniar Karan A.	Dr. Shreeraj Shah
Development and evaluation of Oxcarbazepine Oral film for treatment of epilepsy	₹ 1,00,000.00	Bhavyan Mankad	Dr. Shreeraj Shah
Formulation development and optimization of Idebenone loaded Nanostructured Lipid Carrier for intranasa delivery in alzheimer's disease	₹ 1,00,000.00	Yash Patel	Dr. Manali Prajapati
Development of plant-derived exosomes-based nanoformulatio for ibrutinib	₹ 1,00,000.00	Dhwani Shah	Dr. Kaushika Patel
Formulation and Characterization of Imatinib mysylate with Berberine Co-loaded nanoparticle for site-specific drug delivery in colon cancer therapy	₹ 1,00,000.00	Meghna Vaidya	Dr. Jaymin Patel
Formulation and evaluation of Microneedle-Based transdermal iron delivery system	₹ 37,731.00	Afreen Khan	Dr. Shital Trivedi
Development and evaluation of Docetaxel-Hesperidin loaded nano formulation for the treatment of breast cancer	₹ 49,800.00	Madhav Raja	Dr. Bindu Yadav

Events of Antrapreneur

GTM Innovation Edge

Date: 17th October, 2024
Organized by: Idea Roast in collaboration with Ecell LJ powered by Antrapreneur – The Business Incubator
Number of Participants- 60

The event featured an engaging pitching session where selected startups presented their GTM plans, showcasing how they intend to position and scale their offerings effectively. The expert panel provided constructive critiques, guiding founders to refine their strategies with real-world insights. An interactive quiz on brand positioning in global markets added a fun yet informative twist, helping participants understand key concepts and market dynamics that could influence their GTM strategies. The event saw active participation from early-stage entrepreneurs, aspiring founders, and startup enthusiasts.

GTM Innovation Edge successfully met its objective of equipping startups with practical knowledge, exposure, and mentorship around Go-To-Market strategies. The collaborative efforts of Idea Roast, Ecell LJ, and Antrapreneur The Business Incubator played a vital role in curating a meaningful and enriching experience for all participants.

Events Highlights

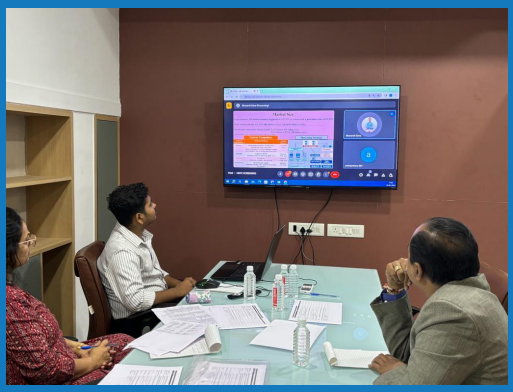
Gujarat Startup Fest 2.0

Date: 20th & 21st October, 2024
Organized by: Snehshilp Foundation
Number of Participants- 300
Execution Partner: Antrapreneur -The Business Incubator

Gujarat Startup Fest 2.0 aimed to nurture Gujarat's Startup ecosystem by creating a collaborative platform for entrepreneurs, investors, industry leaders, and ecosystem enablers. The event sought to inspire, connect, and catalyse startups towards sustainable growth by facilitating knowledge sharing, investment opportunities, mentorship, and networking. All segments of the fest were curated, planned, and executed by Antrapreneur-The Business Incubator.

Gujarat Startup Fest 2.0 emerged as one of the landmark Startup events of the year, successfully driving collaboration, investment, and learning.

Events Highlights



LJKF- Incubator Seed Management Committee (ISMC) constituted under the Startup India Seed Fund Scheme

Date: 14th November, 2024
Organized by: Antrapreneur- The Business Incubator
Number of Participants- 3 Startups

The IC Pitching Event provided a platform for startups to pitch their business ideas for selection under the Industries Commissionerate (IC) Scheme. This initiative aimed to support high-potential startups with incubation opportunities, mentorship, and access to government-backed benefits.

The primary objective of the event was to evaluate and identify innovative startups eligible for the Industries Commissionerate (IC) Scheme, which offers financial aid, mentorship, and incubation support to foster entrepreneurial growth. The event enabled startups to present their business models to a panel of experienced jury members and receive valuable feedback for further refinement.

The IC Pitching Event at Antrapreneur successfully provided startups with an opportunity to gain insights from industry experts and improve their business strategies. The selected startups will now advance to the next stage of the IC Scheme, where they will receive incubation support and funding opportunities to scale their ventures.

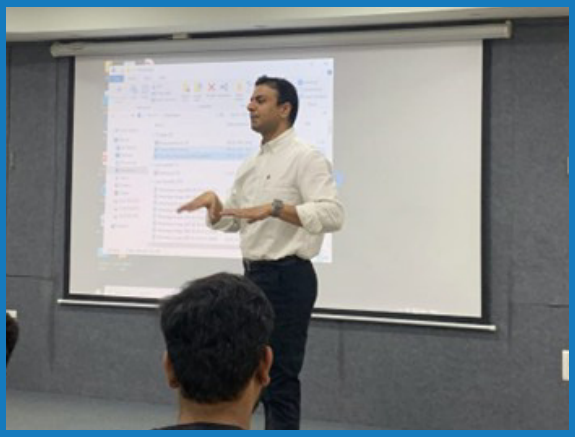
Events Highlights

Startup Meet & Greet with Padma Vibhushan Dr. Montek Singh Ahluwalia

Date: 26th December, 2024
Organized by: Antrapreneur- The Business Incubator
Number of Participants- 15 Startups

The objective of this exclusive Startup Meet & Greet was to provide promising startups under the wing of Antrapreneur The Business Incubator an opportunity to engage in meaningful dialogue with **Padma Vibhushan Dr. Montek Singh Ahluwalia**. One of India's most respected economists and policy-makers. The event aimed to facilitate knowledge sharing, strategic guidance, and valuable networking for startups operating across various sectors, including health tech, social media, technology, e-commerce, sports tech, and more. The Startup meet & greet with Dr. Montek Singh Ahluwalia proved to be a highly enriching experience for the participants. It not only offered startups exposure to policy perspectives that can shape the entrepreneurial ecosystem but also strengthened the sense of community within the incubator. The event reinforced the importance of building businesses that serve India's broader population while simultaneously pushing for self-reliance in critical sectors like healthcare. Overall, the interaction fostered inspiration, learning, and lasting connections.

Events Highlights



IPR Marathon - Workshop on Patent Application

Date: 1st to 4th January, 2025
Organized by: Antrapreneur- The Business Incubator
Number of Participants- 100

Resource Persons:
Satguru IP - Harpreet Singh Banker,
Soni & Soni - Gaurav Soni

The two-days Intellectual Property Rights (IPR) Workshop was held with the goal of educating and empowering participants to navigate the complexities of patent filing and intellectual property protection. The event attracted 100 teams from a wide array of industries, encompassing over 15 different domains, each eager to gain insight into the patent application process and to safeguard their innovative ideas.

The IPR workshop proved to be a significant success, with participants gaining a wealth of knowledge and practical experience in the field of patent applications. By the end of the event, participants were better equipped to approach the patent filing process with confidence. The mentoring sessions were particularly beneficial, as they provided tailored advice that addressed the specific challenges faced by teams in different industries. Additionally, the event facilitated networking opportunities, allowing participants to engage with experts and fellow innovators, which may lead to future collaborations and partnerships.

Events Highlights

Winning Pitches: A Hands-On Journey From Deck To Delivery

Date: 7th January, 2025 (Online)
10th-11th January, 2025 (Off line)
Duration: 3 Days Workshop Hybrid Mode
Facilitator: Priyanka Challa
No of Participants: Bellezoe by Bella shah, Esha Sutram LLP, Ray wellness and 5 startups.

Winning Pitches: A Hands-On Journey From Deck To Delivery is an interactive, immersive three days workshop designed to help entrepreneurs, business leaders, and professionals perfect their pitching skills. Whether pitching to investors, clients, or partners, this event guides participants through the entire pitching process, from creating an effective pitch deck to delivering it with confidence. The event features expert-led sessions, real-time feedback, and practical exercises to enhance each participant's ability to craft clear, compelling, and persuasive pitches. Attendees will learn the key elements of successful pitch decks, storytelling techniques, and how to master the art of delivery in front of an audience.

"Winning Pitches: A Hands-On Journey From Deck To Delivery" empowers participants with the skills and knowledge necessary to deliver pitches that stand out. Whether they are raising capital, securing new clients, or presenting new business opportunities, attendees will leave the event with the confidence and tools to succeed.

Events Highlights

Startup Elevate 2025 Ignition for Industry Integration and Business Collaboration

Date: 10th January, 2025
Organized by: Antrapreneur- The Business Incubator
Number of Participants- 11 Startups
Mentors-50

"Ignition for industry integration and business collaboration" is a strategic initiative designed to bridge the gap between innovative startups and established industries. The event aims to create opportunities for collaboration, drive business integration, and fuel cross-sector growth through technology and partnerships. The main goal was to accelerate innovation, foster meaningful business relationships, and transform industries by bringing together key players-startups, industry leaders, investors, and professionals.

Ignition for industry integration and business collaboration will serve as a catalyst for creating meaningful partnerships, accelerating innovation, and providing startups with the resources they need to thrive in a competitive marketplace. This event will generate lasting outcomes, transforming the way industries and startups collaborate and evolve.

Events Highlights

Women in Nation Building (Win) Series - Ahmedabad Chapter

Date: 11th January, 2025
Organized by: Antrapreneur- The Business Incubator
Number of Participants- 100

This Event was part of a larger statewide initiative led by the Unified growth foundation, aimed at acknowledging the essential contributions of women in Nation-Building. It was organized in collaboration with the karnavati women empowerment committee and the Gcci business women committee, with ahmedabad mirror as the media partner.

The Win series in Ahmedabad was a celebration of women's accomplishments and a call to continue working towards a more empowered and equal society. The event successfully connected a diverse audience to foster collaboration, leadership, and lasting change for women in nation-building.

Events Highlights

National Startup Day 2025

Date: 16th January, 2025
Number of Participants- 300

National Startup Day 2025 was a momentous celebration of innovation, collaboration, and the entrepreneurial spirit. The event, hosted by Antrapreneur-The Business Incubator, brought together a diverse community of startups, investors, mentors, and government leaders. The highlight of the event was the unveiling of the **#Wall of Fame for Startups**, a tribute to the ground-breaking ventures that have made remarkable strides in the entrepreneurial ecosystem. This wall not only celebrates the passion, innovation, and resilience of startups but also serves as a platform to connect them with potential collaborators, investors, and professionals who can help fuel their growth. The evening was a blend of insightful conversations, networking, and celebration, reinforcing the power of community in driving the Startup ecosystem forward.

Events Highlights

Outcomes of the Event:

Stronger Connections: Entrepreneurs, investors, and mentors connected, opening doors for funding and collaboration.

Collaborative Growth: The event boosted Gujarat's startup ecosystem through knowledge sharing and new partnerships.

Celebrating Innovation: The #Wall of Fame honoured startups' innovation and highlighted their impact on the future of business and technology.

National Startup Day 2025 was a grand success, combining inspiration, knowledge, and networking in a dynamic environment that celebrated the entrepreneurial spirit. The #Wall of Fame for Startups acted as a centrepiece, honouring the resilience and passion of startups while providing them with a platform to connect with the right resources for growth. With a focus on collaboration, knowledge sharing, and community-building, the event reinforced the importance of a strong, supportive ecosystem for the success of startups.

Events Highlights

9th Edition of LJ Innovation Village

Date: 1st & 2nd March, 2024
Number of Participants- 100

The 9th Edition of **LJ Innovation Village** was inaugurated on 1st March 2024 by esteemed dignitaries including **Shri Shailesh Patwari**, Former President GCCI, Ahmedabad, and **Arvind Patel**, Chairman, Sahajanand Laser Technology Ltd, in the presence of **Dr. Dinesh Awasthi**.

Honourable Vice-Chancellor, LJKU, Dr. Manish Shah, Vice-President, LJKU, Trustees of LJKU, Directors of various LJKU institutions. The primary objective of the LJ Innovation Village 2024 was to provide a dynamic platform for innovators, students, researchers, and entrepreneurs to showcase their projects, products, and startup ideas.

Events Highlights

Over 250 projects, products, and startups were showcased by 1,250+ participants representing 5 states across India. The 9th Edition of LJ Innovation Village successfully met its objectives by serving as a launchpad for young innovators and entrepreneurs. The event not only celebrated creativity and problem-solving but also provided participants with real-world exposure and potential growth opportunities. The support from industry leaders, academic experts, and ecosystem stakeholders further validated the importance of such initiatives in shaping the future of innovation and entrepreneurship in India.

Events Highlights

Events Highlights

Women Investing in Women 3.0 Inauguration

Date: 21st March, 2025
Organized By: L J Antrapreneur -The Business Incubator
Number of Participants - 14 Associate Partners

Women Investing in Women 3.0 was a landmark event dedicated to celebrating, empowering, and inspiring women in entrepreneurship and leadership. Organized by LJK University and LJ Antrapreneur, the event provided a platform for networking, knowledge-sharing, and fostering growth among women entrepreneurs, students, and industry leaders.

The event was graced by esteemed dignitaries whose leadership and expertise added immense value to the discussions and engagements.

Dignitaries Present: Dr. Dinesh Awasthi (Vice Chancellor, LJK University), Dr. Viral Shah (Founder, Antrapreneur & Executive Director, LJK University), Ms. Debopriya Chakraborty (CEO, Antrapreneure)

The Business Incubator additionally, a special felicitation ceremony was held for Equitas, the Associate Sponsor of the event. Women Investing in Women 3.0 a phenomenal success.

Events Highlights

Point to Point

Date: 21st March, 2025
Organized By: L J Antrapreneur -The Business Incubator
Number of Participants – 10 Speakers

The "POINT TO POINT" event was a remarkable gathering of visionary women leaders, entrepreneurs, and changemakers. The event served as a platform to celebrate the strength, leadership, and empowerment of women from various fields. It was a day filled with insightful discussions, networking opportunities, and inspiring stories that motivated everyone present. The event began with a warm welcome, setting the stage for an insightful session featuring 10 phenomenal businesswomen who shared their real-life experiences.

Guest Speakers & Their Contributions

Ms. Radhicka Ribadia: Founder of Radz Art Studio, Ahmedabad.

Ms. Anar Thakershy: Founder of Anar Thakershy & Associates.

Ms. Meera Ambasana Shah: Co-Founder of Weekend Window, Gujarat's largest shopping festival. **Ms. Priyanshi Patel:** Managing Director of Tirupati Agrotech Pvt Ltd and Founder of Olixir Gourmet Oils.

Ms. Rajiben Vankar: Founder of Rajiben - Crafting a Better Planet, specializing in plastic upcycling. **Ms. Purvi Shah:** Founder of Shree Danev Foundation, dedicated to animal welfare and rescue. **Ms. Pabiben Rabari:** Founder of Pabiben.com, a globally recognized artisan enterprise. **Ms. Shital Shah:** Acclaimed actress, filmmaker, and entrepreneur. Ms. Savitaben: CEO of SEWA Trade Facilitation Centre, empowering local artisans.

Events Highlights

The Power Dias
Women in Technology Panel

Date: 21st March, 2025
Conducted during: Women Investing in Women 3.0
Number of Participants – 5 Panellists

The objective of the Women in Technology panel was to create a platform for leading women professionals in the tech industry to share their journeys, challenges, and strategies for overcoming barriers. The session aimed to inspire, guide, and empower women entrepreneurs and professionals by highlighting the importance of mentorship, networking, skill development, and the role of technology in driving business growth. The discussion also intended to encourage investment and ecosystem support for women-led tech ventures.

Women in Rural Initiatives Panel

The objective of the Women in Rural Initiatives panel was to shed light on the challenges and opportunities faced by women entrepreneurs in rural areas. The session aimed to explore strategies for achieving financial independence, improving market access, and blending traditional skills with modern business models.

The Power Dias: Women in Business panel discussion was a significant event at **Women Investing in Women 3.0**, aimed at celebrating the achievements of women leaders and entrepreneurs while addressing key challenges in the business world. Power Dias - Women in Creativity. The session aimed to inspire, empower, and elevate women in creative fields by sharing stories of resilience, innovation, and leadership.

Events Highlights

Mentor Mocktail (2) (#Knowledge Drink)

Date: 21st & 22nd March, 2025
Number of Participants – 25 Startups & 80 Mentors
Conducted during: Women Investing in Women 3.0

The objective of the Mentor Mocktail (#Knowledge Drink) segment was to provide focused, domain-specific mentorship to women-led startups participating in Women Investing in Women 3.0. The initiative aimed to bridge the gap between aspiring women entrepreneurs and industry experts, enabling startups to refine their ideas, overcome business challenges, and prepare for scaling. The sessions were designed to offer practical, actionable guidance across critical business domains such as marketing, finance, technology, operations, and more.

Spanning two days, **Mentor Mocktail** brought together a powerful blend of aspiring women entrepreneurs and seasoned industry mentors. The Mentor Mocktail successfully delivered on its objectives and created a meaningful impact by providing startups with personalized, expert guidance tailored to their sector and stage of development. Enhancing the entrepreneurial capacity of women-led teams to make informed decisions for business growth.

Events Highlights

The Spotlight Pitch (#PitchKeDekho)

Date: 22nd March, 2025
Conducted during: Women Investing in Women 3.0
Number of Participants – 9 Startups

The objective of The Spotlight Pitch was to provide a high-impact platform for women-led startups to pitch their business ideas to leading venture capitalists and angel investors. The goal was to bridge the gap between women entrepreneurs and investors by offering financial backing and strategic guidance to ventures at crucial stages of growth.

The Spotlight Pitch (#PitchKeDekho) witnessed enthusiastic participation from women-led startups across the country over 80 applications were received, out of which 9 promising startups from 5 different states were selected to pitch.

The major outcomes of this event were Successful participation of 9 women-led startups, Direct engagement with 6 VC partners, offering both capital and advisory opportunities. Investors showed keen interest in several startups, initiating further due diligence processes. Startups benefited from constructive feedback on their pitches, financial strategies, and scaling plans. Strengthened investor confidence in women-led ventures, encouraging future investment prospects.

Events Highlights

Demo Day Report: Women Investing in Women 3.0

Date: 22nd March, 2025
Organized by: Antrapreneur-The Business Incubator
Number of Participants – 6 Startups & 6 Jurors

Women Investing in Women is an annual event organised by Antrapreneur, which was aimed to bridge gap by showcasing promising women-led start-ups in front of Jurors and Audience where they had to give feedback and suggestions for the improvement of the start-ups. Over 100 attendees, including 6 Jurors and 6 startups, participated. The event resulted in a grand success, lot of learning and fostered key networking opportunities between entrepreneurs and investors.

The Objectives of event was Promote and support female entrepreneurs. Facilitate potential investment opportunities for women-led startups. Create a strong network of women investors and founders. Providing feedback of the market. The event was a significant step in increasing investment and motivation to women-led businesses, with strong audience participation and startup enthusiasm, Women Investing in Women Demo Day segment was a successful event with lot of feedback, suggestions, discussions.

Events Highlights

Learn-to-Earn
Power Workshops

Date: 21st & 22nd March, 2025
Conducted during: Women Investing in Women 3.0
Number of Participants - 100

The Learn-to-Earn segment was designed with the objective of equipping women with practical, industry-relevant skills that could directly translate into income-generating opportunities. The workshops aimed to help aspiring women entrepreneurs, professionals, and students enhance their capabilities, build confidence, and learn actionable skills across different domains. The focus was on hands-on learning, empowering participants to leverage their passions and turn them into profitable ventures or career advancements.

Under the banner of Power Workshops, the Learn-to-Earn segment hosted 5 highly focused workshops, each curated to meet specific learning and upskilling needs. The workshops were led by 5 expert facilitators who shared industry insights, practical strategies, and actionable frameworks with participants.

Events Highlights

NARI 2.0 – Women Entrepreneurs Exhibition & Knowledge Session NARI 2.0 – She Leads, She Inspires, She Builds

Date: 21st & 23rd March, 2025
Number of Participants-100

The event witnessed an overwhelming participation of over 6,500 visitors across three days, with a significant presence of women entrepreneurs, industry leaders, business enthusiasts, and aspiring entrepreneurs. 100+ businesses from diverse industries across India showcased their products and services at the exhibition, reflecting the strength and diversity of women-led enterprises. NARI 2.0, an initiative by the Confederation of Women Entrepreneurs (COWE) – Gujarat Chapter, was organized from March 21st to March 23rd, 2025, at Karnavati Club, Ahmedabad. The event served as a comprehensive platform for women entrepreneurs to exhibit their businesses, network with industry experts, and gain insights from curated knowledge sessions. Building upon the success of NARI 1.0, this edition expanded its reach and impact by integrating industry-specific knowledge-sharing sessions, curated networking opportunities, and panel discussions on pressing issues faced by women entrepreneurs.
Primary objectives of NARI 2.0 and the Knowledge Session curated by Antrapreneur were: Empower Women Entrepreneurs, Facilitate Networking & Business Growth, Knowledge Sharing & Capacity Building, Knowledge Session Curated bk Antrapreneur, NARI 2.0 reaffirmed the power of women entrepreneurs in shaping industries and communities. The event set a new benchmark for women-led business exhibitions in Gujarat, proving that when women lead, inspire, and build, they create transformative change in the entrepreneurial landscape.

OUTPUT & IMPACT

Copyright and Patents Granted

Title of the Copyright:

Foot Posture Index: Normative Values for Paediatric Population

Author:
Dr. Jalpa Parikh

Copyright Registration Number:
L-163627/2025
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An Exercise Protocol for Recreational Cyclists Suffering From Anterior Knee Pain

Author:
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NATIONAL

Title of the Patent:

Machine Learning Embedded Heart Health Monitoring Device

Author:
Ms. Kinjal Parmar

Patent Listing Number:
6392893

Type of Patent:
UK Design Patent

L J Institute of Engineering & Technology

INTERNATIONAL

Title of the Patent:

Vermicompost unit for plant waste recycling

Author:
Dr. Anita Sharma

Patent Listing Number:
6406885

Type of Patent:
UK Design Patent

L J School of Applied Sciences

INTERNATIONAL

Title of the Patent:	Author:		
Cellulose Based Pour Point Depressant for Crude Oil	Dr. Yadvendrakumar Agrawal Patent Number Listing: 549392 (202321072176) Type of Patent: Indian Utility Patent	L J School of Applied Sciences	NATIONAL
Human-AI Interaction in Collaborative Robotics	Mr. Mohammed Azim Shaikh Patent Number Listing: 202441101892 Type of Patent: Indian Utility Patent	L J School of Diploma Engineering	NATIONAL
Solar Panel Roof Design for Electric Vehicles	Mr. Mohammed Azim Shaikh Patent Listing Number: 6444012 Type of Patent: UK Design Patent	L J School of Diploma Engineering	INTERNATIONAL
Machine Learning Powered Malware Detection Device	Ms. Kinjal Parmar Patent Listing Number: 451529-001 Type of Patent: Indian Design Patent	L J Institute of Engineering & Technology	NATIONAL

Research Publications

Research Publications

School of Pharmacy
L.J. Institute of Pharmacy

1. Dipa Israni & Rohinee Dodiya


Exploring the versatility of miRNA-128: A comprehensive review on its role as a biomarker and therapeutic target in clinical pathways, Molecular Biology Reports, Springer Nature
Scopus: Q2, Web of Science

Abstract: Micro RNAs (miRNAs/ miRs) are short, noncoding RNAs, usually consisting of 18 to 24 nucleotides, that control gene expression after the process of transcription and have crucial roles in several clinical processes. This article seeks to provide an in-depth review and evaluation of the many activities of miR-128, accentuating its potential as a versatile biomarker and target for therapy; The circulating miR-128 has garnered interest because of its substantial influence on gene regulation and its simplicity in extraction. Several miRNAs, such as miR-128, have been extracted from circulating blood cells, cerebrospinal fluid, and plasma/serum. The miR-128 molecule can specifically target a diverse range of genes, enabling it to have intricate physiological impacts by concurrently regulating many interrelated pathways. It has a vital function in several biological processes, such as modulating the immune system, regulating brain plasticity, organizing the cytoskeleton, and inducing neuronal death. In addition, miR-128 modulates genes associated with cell proliferation, the cell cycle, apoptosis, plasma LDL levels, and gene expression regulation in cardiac development. The dysregulation of miR-128 expression and activity is associated with the development of immunological responses, changes in neural plasticity, programmed cell death, cholesterol metabolism, and heightened vulnerability to autoimmune illnesses, neuroimmune disorders, cancer, and cardiac problems; The paper highlights the importance of studying the consequences of miR-128 dysregulation in these specific locations. By examining the implications of miRNA-128 dysregulation in these areas, the article underscores its significance in diagnosis and treatment, providing a foundation for research and clinical applications.

2. Shreeraj Shah

The Evolving Landscape of Colonoscopy: Recent Developments and Complication Management, Colonoscopy - Diagnostic and Therapeutic Advances, Intech Open

Abstract: Colorectal cancer is globally recognized as the third most prevalent cancer, highlighting the crucial role of colonoscopy in diagnosis and therapeutic interventions. This medical procedure has demonstrated its effectiveness in preventing colorectal cancer and investigating a wide range of

gastrointestinal symptoms. It has long been acknowledged as the gold standard for screening colorectal cancer. The primary objective of this analysis is to outline diverse range of complications associated with preparatory phase of colonoscopy, especially among hospitalized patients, including those with potentially life-threatening conditions. The ultimate aim is to elucidate strategies to prevent complications during the preparatory phase of colonoscopy. The real-time visual feed produced by endoscopic camera allows for the detection of abnormal growth of the colonic wall. This capability facilitates the assessment, biopsy, and removal of mucosal lesions through various biopsy instruments accessible via specialized channels. With its multifaceted utility, colonoscopy has become a frontline approach in making colorectal cancer a preventable and early-detectable disease over the past few decades. Common complications associated with colonoscopy include occurrences like vomiting, nosebleeds, abdominal pain, and acute diarrhoea. This review primarily focuses on developments that have transpired over the past five years, leading to changes in multiple aspects of colonoscopy.

3. Shital Trivedi & Shreeraj Shah

Ferrous ascorbate non-effervescent floating mini-caplets as an oral iron supplement, Drug Delivery and Translational Research, Springer
Scopus: Q1, Web of Science

Abstract: This research aimed to develop non-effervescent floating mini-caplets of Ferrous Ascorbate (FA) using low-density polymers to overcome the problems of poor bioavailability associated with immediate-release iron products.

Methods: The excipients and method (melt granulation) were selected based on pre-and post-compression parameters in trial batches. The formulation was optimized by a full factorial 32 experimental design. An optimized formulation was evaluated for drug release kinetic, accelerated stability study, and in vivo study in healthy adult New Zealand female rabbits.

Results: The optimized formulation F6 mini-caplets (42.5% FA, 45% Glyceryl palmitostearate as Precirol, 10% polyvinyl pyrrolidone K-30, and 2.5% lactose) were found to have instant floating and 12 h floating duration in 0.1N Hydrochloric acid (HCl) dissolution medium. In vitro drug release (diffusion mechanism) at 1 h and 5 h was 30–35% and 65–70%, respectively. It was found stable for three months under an accelerated stability study. In vivo study showed significantly increased serum iron levels and decreased unsaturated iron binding capacity (UIBC) in the test group (optimized formulation) compared to control and standard (immediate-release iron).

Conclusion: Based on the in vitro and in vivo results, we conclude that non-effervescent floating FA mini-caplets have higher bioavailability compared to immediate release FA, which may be attributed to prolonged iron release at its absorption site due to their retention in the gastric region. Hence, non-effervescent floating FA mini-caplets may act as a potential approach for iron deficiency.

4. Tosha Pandya & Yash Raj Singh


Zeolite-based nanoparticles drug delivery systems in modern pharmaceutical research and environmental remediation, Heliyon, Elsevier
Scopus: Q1, Web of Science

Abstract: This review explores the potential of zeolite-based nanoparticles in modern pharmaceutical research, focusing on their role in advanced drug delivery systems. Zeolites, integrated into polymeric materials, offer precise drug delivery capabilities due to their unique structural features, biocompatibility, and controllable properties. Additionally, zeolites demonstrate environmental remediation potential through ion exchange processes. Synthetic zeolites, with modified release mechanisms, possess distinctive optical and electronic properties, expanding their applications in various fields. The study details zeolites' significance across industrial and scientific domains, outlining synthesis methods and size control techniques. The review emphasizes successful encapsulation and functionalization strategies for drug delivery, highlighting their role in enhancing drug stability and enabling targeted delivery. Advanced characterization techniques contribute to a comprehensive understanding of zeolite-based drug delivery systems. Addressing potential carcinogenicity, the review discusses environmental impact and risk assessment, stressing the importance of safety considerations in nanoparticle research. In biomedical applications, zeolites play vital roles in antidiarrheal, antitumor, antibacterial, and MRI contrast agents. Clinical trials featuring zeolite-based interventions underscore zeolite's potential in addressing diverse medical challenges. In conclusion, zeolite-based nanoparticles emerge as promising tools for targeted drug delivery, showcasing diverse applications and therapeutic potentials. Despite challenges, their unique advantages position zeolites at the forefront of innovative drug delivery systems.

5. Sheetal Acharya & Shreeraj Shah


Antipsoriatic Effect of Silymarin NLCs Based Gel: In Vitro and In Vivo Activity AAPS Pharm SciTech, Springer
Scopus: Q2, Web of Science

Abstract: Psoriasis is a chronic inflammatory disorder affecting over 100 million people, requires long-term therapy. Current treatments offer only symptomatic relief. However, phytoconstituents-based therapies like Silymarin (SLM) have shown promising effects. The study aims to develop, optimize, and

evaluate a novel stable SLM NLC gel to improve anti-psoriatic activity by enhancing its permeability and retention into the dermal layer. SLM NLC formulation was prepared and optimized using 32 full factorial designs. The formulation was evaluated for the particle size, PDI, zeta potential, and % entrapment efficiency, evaluated by Transmission electron microscopy and thermal analysis. The freeze dried and prepared NLC-loaded gel was evaluated for physicochemical parameters, ex-vivo, and in-vivo studies. SLM-loaded NLC shows 624 nm particle size, 0.41 PDI, 92.95% entrapment efficiency, and -31.6 mV zeta potential. The sphere form of NLCs was confirmed using TEM. Controlled drug release was observed in ex vivo studies, low PASI score compared to disease control. Further, the levels of IL-6, TNF-α, and NF-κB were also reduced. The results are supported by histopathology showing minimal parakeratosis indicated in the SLM NLC-treated group. Prepared NLC-based shows enhance topical penetration and decrease the thickness of psoriatic plaques in the in vivo study.

6. Shreeraj Shah

3D printing chronicles in medical devices and pharmaceuticals: tracing the evolution and historical milestones, Journal of Biomaterials Science, Polymer Edition. Taylor and Francis
Scopus: Q2, Web of Science

Abstract: The objective of this study is to collect the significant advancements of 3D printed medical devices in the biomedical area in recent years. Especially related to a range of diseases and the polymers employed in drug administration. To address the existing limitations and constraints associated with the method used for producing 3D printed medical devices, in order to optimize their suitability for degradation. The compilation and use of research papers, reports, and patents that are relevant to the key keywords are employed to improve comprehension. According to this thorough investigation, it can be inferred that the 3D Printing method, specifically Fuse Deposition Modeling (FDM), is the most suitable and convenient approach for preparing medical devices. This study provides an analysis and summary of the development trend of 3D printed implantable medical devices, focusing on the production process, materials specially the polymers, and typical items associated with 3D printing technology. This study offers a comprehensive examination of nanocarrier research and its corresponding discoveries. The FDM method, which is already facing significant challenges in terms of achieving optimal performance and cost reduction, will experience remarkable advantages from this highly valuable technology. The objective of this analysis is to showcase the efficacy and limitations of 3D-printing applications in medical devices through thorough research, highlighting the significant technological advancements it offers. This article provides a comprehensive overview of the most recent research and discoveries on 3D-printed medical devices, offering significant insights into their study.

7. Kaushika Patel

Plant-derived exosomes in therapeutic nanomedicine, paving the path toward precision medicine, Phytomedicine, Elsevier
Scopus: Q1, Web of Science

Abstract: Plant-derived exosomes (PDEs), are nanoscale vesicles secreted by multivesicular bodies, play pivotal roles in critical biological processes, including gene regulation, cell communication, and immune defense against pathogens. Recognized for their potential health-promoting properties, PDEs are emerging as innovative components in functional nutrition, poised to enhance dietary health benefits. To describe the efficacy of PDEs in nanoform and their application as precision therapy in many disorders. The design of this review was carried out in PICO format using randomized clinical trials and research articles based on in vivo and in vitro studies. All the relevant clinical and research studies conducted on plant-derived nanovesicle application and efficacy were included, as retrieved from PubMed and Cochrane, after using specific search terms. This review was performed to determine PDEs' efficacy as nanomedicine and precision therapy. Sub-group analysis and primary data were included to determine the relationship with PDEs.

PDEs are extracted from plant materials using sophisticated techniques like precipitation, size exclusion, immunoaffinity capture, and ultracentrifugation, encapsulating vital molecules such as lipids, proteins, and predominantly microRNAs. Although their nutritional impact may be minimal in small quantities, the broader application of PDEs in biomedicine, particularly as vehicles for drug delivery, underscores their significance. They offer a promising strategy to improve the bioavailability and efficacy of therapeutic agents carrying nano-bioactive substances that exhibit anti-inflammatory, antioxidant, cardioprotective, and anti-cancer activities.

8. Dipa Israni & Mansi Shah

Harnessing Cannabis sativa Oil for Enhanced Skin Wound Healing: The Role of Reactive Oxygen Species Regulation, Pharmaceutics, Multidisciplinary Digital Publishing Institute (MDPI)
Scopus: Q1, Web of Science

Abstract: Cannabis sativa emerges as a noteworthy candidate for its medicinal potential, particularly in wound healing. This review article explores the efficacy of cannabis oil in reducing reactive oxygen species (ROS) during the healing of acute and chronic wounds, comparing it to the standard treatments.

ROS, produced from various internal and external sources, play a crucial role in wound development by causing cell and tissue damage. Understanding the role of ROS on skin wounds is essential, as they act both as signaling molecules and contributors to oxidative damage.

9. Bhumi Shah & Radhika Kachhadiya


Shaping the Future of Medicine Through Diverse Therapeutic Applications of Tetralin Derivatives, Medicinal Chemistry Research, Springer
Scopus: Q2, Web of Science

Abstract: Tetralin is an ortho-fused bicyclic hydrocarbon notable for its odour of a mixture of benzene and menthol and high boiling point. Its low vapor pressure has limited its study by far-infrared spectroscopy but vibrational data have been obtained through alternative methods such as single vibronic level fluorescence (SVLF) and high-temperature vapor-phase Raman spectra. Tetralin is of more than chemical interest because it is part of several biologically active compounds. Interestingly, tetralin is a structural element of the anthracycline antibiotics that are clinically applied in cancer chemotherapy owing to their DNA-intercalating activity. The tetralin ring is crucial in sertraline, an antidepressant, and other clinically relevant compounds, including antifungal, anti-Parkinsonian, and anti-inflammatory activity. A comprehensive overview of tetralin derivatives with their diverse biological activities and therapeutic potentials has been discussed in the review. It also encompasses the synthetic methodology for the synthesis of tetralin and its derivatives including hydrogenation, and cyclization through metal catalysts, and visible light. In addition, a green chemical synthetic technique such as supercritical fluid technology was discussed, which improves the production of tetralin. Apart from that, metabolic pathways and catabolism of tetralin in biological systems and drug delivery systems of tetralin have been discussed. The review underlines the importance of tetralin derivatives in medicinal chemistry and has future developmental potential in therapeutic applications.

10. Shweta Gandhi & Priya Shah


Insights on Effective Complementary Strategies in the Management of Urinary Tract Infections Scripta Medica, Faculty of Medicine
Scopus: Q4

Abstract: Urinary tract infections (UTIs) are common health issues that occur frequently in both women and men. These infections occur in the urinary tract, leading to discomfort and potential complications. Prompt medical attention is essential to diagnose and treat UTIs effectively. Aim of this research was to provide an overview of effective complementary strategies in the management of UTIs. This review paper focuses on the current and future treatment strategies for UTI infections. Various natural remedies have been investigated as potential complementary therapies to enhance health outcomes for UTI patients. The efficacy of frequently employed natural products, including cranberry juice/extracts, ascorbic acid, hyaluronic acid, probiotics and multi-component formulations designed for the treatment and prevention of UTIs, has been explored. The probiotics serve to break down food and increase our immunity. Usually, multiple doses of antibiotics are used to treat these infections, but there are many side effects and bacterial resistance rates are increasing. Complementary UTI management strategies, including effective dietary regimens and new formulations, are attaining approvals. Drinking liquids daily significantly suppresses UTI infections. Incorporating daily consumption of cranberry juice may still be regarded as a viable complementary strategy to aid in the management of UTI infections.

11. Bindu Kumari Yadav

Impact of 5-Flurouracil loaded chitosan nanoparticle on A375 and A431 cell line for the therapy of skin cancer, Tissue and Cell, Elsevier Scopus: Q2, Web of Science

Abstract: Skin cancer is an uncontrolled proliferation of abnormal skin cells that is usually caused by damaging UV radiation. Skin cancer is classified into two types: non-melanoma skin cancer and melanoma skin cancer. The entire studies focus on cytotoxic effect of prepared 5-Flurouracil loaded chitosan nanoparticle using A375 and A431 skin cancer cell line. In-vitro cell cytotoxicity assay, DAPI test of prepared formulation was conducted to observe the cytotoxic effect. The cell cytotoxicity investigation revealed that nanoparticles had higher cytotoxicity, inducing greater apoptosis within 72 h. The experimental results show that the produced nanoparticle is a good candidate for use as a 5-FU carrier in the treatment of skin cancer.

12. Priya Shah & Sheetal Acharya


Novel Gastroretentive formulation of an Ayurvedic churna for peptic ulcers: Optimization and evaluation, Journal of Research in Pharmacy, Marmara University Press
Scopus: Q3, Web of Science

Abstract: Avipattikar churna is well known Ayurvedic formulation in India for Amalpitta. Voluminous dose leading to poor patient compliance, less residence time in stomach and less stability are the major limitations of the Churna. Thus, the objective of research work was to develop a novel gastroretentive floating drug delivery system of Avipattikar churna. The churna was prepared and evaluated for phytochemical analysis. The main constituents, Jalap, and Clove, contained scopoletin and eugenol as active markers. A floating tablet of Avipattikar churna was optimized using a 32-factorial design, with HPMC K4M and HPMC K100M concentrations as independent factors and floating lag time (FLT) and % release of scopoletin and eugenol at 1 h, at 4 h and at 8h as dependent variables. The optimized formulations were evaluated by physical parameters. The optimized formulation was selected based on factorial design and numerical desirability Index values. In-vitro dissolution study was performed for optimized formulation and compared with marketed Avipattikar churna. Release mechanisms of markers were determined using various kinetic models and DD solver. The stability studies followed ICH guidelines. The preliminary trial batches were formulated by using direct compression method. 15% of the mixture of HPMC K100M and HPMC K4M was finalised based on the factorial design results and desirability index. Optimized formulation showed FLT of 88 ± 0.3 sec, with cumulative eugenol release at 1h (18.78%), 4h (60.23%), and 8h (95.36%). Scopoletin cumulative release was 21.43%, 68.51%, and 89.34% at 1h, 4h, and 8h, respectively.

13. Dipa Israni

Combined Therapy of Cancer with Vaccines and Chemotherapeutic Agents, Cancer Vaccination and Challenges, Taylor & Francis Group
Scopus indexed

Abstract: Cancer is the most vulnerable group due to the potential of malignant cells to evade and exploit the host immune system. According to the WHO, cancer was the leading cause of death globally in 2020, accounting for approximately 10 million deaths.

Cancer prevention is a crucial public health concern in the 21st century, as it plays a vital role in the fight against cancer. Despite advancements in oncogenic drug development, there are still limitations such as early blood clearance, resistance to cytotoxic drugs, toxicity associated with chemotherapy, and site-specific drug delivery. In recent years, therapeutic cancer vaccinations have gained significant popularity with the development of novel treatments for specific oncologic indications. While cancer immunizations are routinely administered to previously diagnosed cancer patients, resistance to single-agent immunotherapy often leads to treatment failure and toxicity, including neurotoxicity, immunotherapy resistance, and hyper-progressive disease. Only a small portion of patients experience long-term benefits. Due to these limitations, a paradigm shift is necessary in cancer therapy. The growing body of evidence from preclinical and clinical studies supports the potential of certain chemotherapy drugs to synergize with vaccines, offering a successful approach known as 236“chemoimmunotherapy” (CIT). The purpose of studying therapeutic cancer vaccines (CVs) in conjunction with chemotherapy is to improve immune response, treatment effectiveness, and reduce resistance to single-agent immunotherapy. In this review, we will highlight the combination of CVs and chemotherapeutic agents, focusing on the latest combination tactics, synergistic effects, related mechanisms, and associated processes.

14. Mansi Shah

Novel tetracycline hybrids: Synthesis, characterization, docking studies and in-vitro evaluation of antibacterial activity, Future Journal of Pharmaceutical Sciences, Springer Nature
Scopus: Q2, Web of Science

Abstract: The biggest menace in the world today is the infection caused by pathogenic bacteria in humans, where majority of the available antibiotics fail to provide therapeutic results due to resistance. The discovery of new molecules is the need of the hour and several research groups worldwide are contributing to fight this scare. This work highlights our efforts towards discovering novel tetracycline hybrids that could serve as potent agents against several pathogenic bacterial strains causing infections. In total, ten compounds were synthesized which were chemically conjugates of Minocycline, an age-old tetracycline, and naturally occurring aldehydes and ketones available from the plant sources. Structural characterization of these compounds was done using Mass and 1HNMR. Molecular docking was carried out in order to predict the binding affinity of these compounds to various bacterial enzymes and known protein targets and to establish the structure–activity relationships. Molecular dynamic simulation studies and in silico pharmacokinetic and toxicity prediction studies were done to determine in silico pharmacokinetics and toxicity of compounds. In-vitro antibacterial activities were done using standard protocols against gram positive bacteria like Enterococcus faecalis, Staphylococcus aureus and gram-negative bacteria like Klebsiella pneumoniae, Pseudomonas aeruginosa and Escherichia coli. Promising results were obtained viz. compound 1,2 and 10 were found to be more potent against

Staphylococcus aureus, compound 1 against Enterococcus faecalis, compound 2 and 3 against Escherichia coli, compound 7 and 8 against Pseudomonas aeruginosa and compound 7 against Klebsiella pneumoniae when compared with minocycline as standard compound.

15. Tosha Pandya, Disha Joshi & Zenab Presswala



Advanced therapeutic strategies using Thermo-sensitive chitosan/pectin hydrogel in the treatment of multiple cancers, Carbohydrate Polymers, Elsevier, Scopus: Q1, Web of Science

Abstract: Current cancer therapies including immunotherapy and chemotherapy produce adverse side effects that demand improved drug distribution methods. Research shows that thermosensitive chitosan/pectin-based hydrogels serve as an effective platform technology for drug delivery during cancer therapy because of their ability to control drug release at specific locations. The hydrogels perform temperature-triggered sol-gel phase shifts which enables prolonged drug delivery together with minimal toxic side effects. The biocompatible and biodegradable properties of these materials enable solutions against drug resistance and tumour heterogeneity challenges. Studies have demonstrated that these hydrogels enhance drug bioavailability, extend circulation time, and improve tumor targeting, leading to increased therapeutic efficacy and reduced systemic toxicity. Their ability to sustain drug release and penetrate tumour microenvironments makes them a promising strategy for overcoming drug resistance and tumour heterogeneity. Their ability to reproduce native tissue properties poses challenges that scientists must address through improved structural optimization approaches. The combination of latest nanotechnology innovations and interdisciplinary studies has sped up the creation of chitosan/pectin hydrogels for cancer treatment applications.

16. Shreeraj Shah

Revolutionizing transdermal drug delivery: Harnessing the power of nanofibers for drug delivery, International Journal of Polymeric Materials and Polymeric Biomaterials, Taylor and Francis Scopus: Q2, Web of Science

Abstract: More than 300 disorders associated with the human skin have been identified, constituting a global burden of approximately 880 million patients. This review looks at the occurrences of such

conditions and stresses the need for optimized topical drug delivery systems which will reduce localized pharmacological side effects while maximizing skin diseases and systemic diseases symptoms treatment. It lists topical anti-inflammatory/immunosuppressant drugs like corticosteroids, antiviral, antifungal, antibacterial/antiseptic, local anesthetics, and antineoplastic drugs with other drugs affecting tissues via physical or chemical processes. Also, it emphasizes the various types of pharmaceutical dosages, such as semisolid, liquid, spray, and powder in topical treatments. These studies show the importance of effective delivery of drugs to the stratum affected areas, relief of associated signs, and enhancement of therapeutic results in the treatment of skin diseases in humans.

17. Vanessa James

An update on selective estrogen receptor modulator: Repurposing and formulations Naunyn-Schmiedeberg's Archives of Pharmacology, Springer
Scopus: Q2, Web of Science

Abstract: The selective estrogen receptor modulator (SERM) raloxifene hydrochloride (RLH) is used extensively in the management and prevention of breast cancer and osteoporosis. Recent clinical studies show the repurposing of RLH in various diseases based on its structure and some clinical trials studies. Optimizing the clinical effectiveness of this important drug requires a thorough review of the formulation techniques, patent environment, and analytical procedures. The purpose of this study is to give a thorough understanding of dug repurposing with the most recent formulation strategies, patents, and analytical methods related to RLH. Highlighting recent developments, pointing out current issues, and suggesting future lines of inquiry and development are the objectives. A thorough literature analysis was carried out with an emphasis on repurposing of RLH for various diseases and analytical techniques employed in the measurement and quality control of RLH. These techniques included spectroscopic, chromatographic, and electrochemical approaches. Key advancements and trends were found by analyzing patent databases. The evaluation also looked into formulation techniques intended to improve the medicine's therapeutic efficacy and bioavailability, notably cutting-edge drug delivery methods. For the study of RLH, the review identifies several sophisticated analytical techniques that provide increased accuracy and robustness. Significant innovation has been revealed by the patent landscape, particularly in formulations targeted at enhancing solubility and bioavailability. Notable formulation techniques that overcome the drawbacks of conventional techniques include transdermal patches, nanoparticulate systems, and various drug delivery techniques.

18. Disha Joshi

Surface modified proteins and peptides for targeted drug delivery, Progress in Molecular Biology and Translational Science, Elsevier
Scopus: Q4

Abstract: Surface modification of proteins and peptides has emerged as a promising strategy to enhance their therapeutic efficacy and target specificity. This chapter delves into the various techniques employed to modify the surface properties of these biomolecules, including chemical conjugation, site-specific mutagenesis, and peptide synthesis. The focus is on strategies that improve drug delivery to specific target sites, such as tumor cells or inflamed tissues. By modifying surface properties, it is possible to enhance drug stability, reduce immunogenicity, and prolong circulation time. This chapter explores the latest advancements in this field and discusses the potential applications of surface-modified proteins and peptides in the development of novel therapeutic agents.

19. Mansi Shah

Anti-Acne Activity of Minocycline Hybrid
Journal of Young Pharmacists, E Manuscript Technologies
Scopus, Web of Science

Abstract: The Propionibacterium acnes (P. acnes) has been the most abundant acne causing bacteria on human skin. Tetracyclines and macrolides have been used against this bacterium. A need to develop newer antibiotics has been aroused due to point mutations in the genes of P. acnes. This work emphases our efforts to discover novel minocycline hybrids that fight against P. acnes. Nine hybrid compounds were synthesized using minocycline and naturally occurring aldehydes and ketones available from plant sources.

In this study the antibacterial activity of the proposed minocycline hybrids was ascertained using web-application “antiBac-Pred” and in vitro antibacterial activity was processed using standards protocols against P. acnes. The zone of inhibition and minimum inhibitory concentration of synthesized compounds was determined by agar cup diffusion method and broth micro dilution method respectively and compared with standard drugs minocycline, chloramphenicol, ciprofloxacin and ampicillin. The “antiBac-Pred” web application allowed us to predict that the designed minocycline hybrid can inhibit the

growth of P. acnes based on the score of each compound expressed as confidence in its activity. The in vitro antibacterial activity showed promising results, with compound 2 demonstrating almost 4 times lower Minimum Inhibitory Concentration (MIC) for P. acnes and approximately 2 times lesser than minocycline, chloramphenicol, ciprofloxacin and ampicillin against P. acnes. Novel minocycline hybrids may serve as promising scaffolds which can be further optimized in terms of their Absorption Distribution Metabolism Excretion and Toxicity (ADMET) and be clinically utilized as an alternative for the treatment of bacterial infections due to P. acnes.

20. Paresh Patel, Shreeraj Shah & Kaushika Patel



Nanocomposites in focus: Tailoring drug delivery for enhanced therapeutic outcomes, Future Journal of Pharmaceutical Sciences, Springer Nature, Web of science

Abstract: Nanocomposites made of nanoscale materials may be employed to create innovative drug delivery systems that interface better with biological membranes and selectively deliver drugs to specific cells for targeted and personalized treatment. Due to its versatility and usage in construction, marine, car, aerospace, defence, and biological disciplines, nanocomposites research is expanding. Many researchers are introducing nanoparticles to the matrix to improve their qualities. As categorized into polymeric, metallic, and ceramic nanocomposites, the performance characteristics of nanocomposites are improved by different sophisticated top-down and bottom-up preparation methods including in situ polymerization, intercalation techniques, sol–gel, and hydrothermal. These materials can be used for applications such as controlled release, targeted delivery within cells, and pH-responsive systems which take advantage of tumor microenvironments. They improve the efficacy of cancer therapy by modulating the immune system through an immune checkpoint blockade, including PD-1/PD-L1. The composition of polymeric and metallic nanocomposites and the formulations incorporating them are briefed in this work, along with the justification of preference of nanocomposites over other conventional composite materials. Characterization techniques that are employed to study the nanocomposites including X-ray diffraction, scanning electron microscope, transmission electron microscope, Fourier-transform infrared spectroscopy, thermogravimetry, and differential scanning calorimetric are summarized in depth. The described work is a comprehensive review on nanocomposite-based drug delivery system, including importance, manufacturing techniques, formulation development, characterization, and molecular targets. The several opportunities to be explored, limitations prevalent in the area, and future perspectives are discussed to bring revolution in the field of drug delivery and other biomedical applications. The figure explains the fabrication of biopolymer nanocomposites by incorporating polysaccharides, proteins, and polynucleotides with carbon nanomaterials, mineral nanoparticles, and metal nanostructures. Examples include materials for drug delivery, flexible sensors and monitors, energy sources, and lightweight load-bearing structures, focusing on processable, realizable, and sustainable materials (created by BioRender).

21. Manali Prajapat & Shreeraj Shah


3D printing technology in microneedles: An emerging era in transdermal drug delivery, Hybrid Advances, Elsevier
Scopus: Q2

Abstract: 3D printing technology in microneedle (MN) is revolutionizing the transdermal drug-delivery field. This review introduces 3D printing to MN fabrication and its potential to enhance drug delivery efficiency, thereby overcoming issues of earlier methods. Transdermal drug delivery system (TDDS) offers many advantages, remarkably non-invasive delivery with greater patient compliance, by eliminating problems such as first-pass metabolism and gastrointestinal degradation. MNs are minimally invasive devices designed to penetrate the stratum corneum, thus enabling the delivery of various therapeutic agents, including vaccines and biologics. The review separates MNs into several types: solid, coated, hollow, and dissolving, with their characteristic features and applications. 3D printing enables the exact customization of MNs in shape, size, and drug loading capacity, allowing for tailor-made treatments for individual patients. Additionally, 3D-printed MNs offer advantages such as rapid prototyping, complex structural designs, and precise control over drug release, making them highly promising for clinical applications. On the other hand, some challenges remain, such as manufacturing speed limitations and questions about product quality and intellectual property issues. Future advancements in 3D printing materials, automation, and scalable production techniques are expected to overcome these limitations, paving the way for broader adoption. This review also discusses the wide range of applications involving 3D-printed MNs, such as biosensing, cancer treatment, and chronic disease management. It is this synthesis, therefore, that finally underlines the very promise of 3D printing in MN technology towards a revolutionary form of drug delivery in the creation of a future of personalized medicine, overcoming important challenges within current pharmaceutical practice.

22. Nikhil Khandale

Quality by design endorsed fabrication of xanthohumol loaded solid nanostructured lipid carrier-based powder for effective treatment of Alzheimer's disease in rats, Journal of Drug Delivery Science and Technology, Elsevier
Scopus: Q1, Web of Science

Xanthohumol (XH) shows good neuroprotection against Alzheimer's Disease (AD). However, it exhibits poor solubility and low oral bioavailability. The current research presents the formulation, optimization, and characterization of XH-loaded nanostructured lipid carriers (XH-NLCs) to enhance oral bioavailability and therapeutic efficacy of XH in an aluminum chloride-induced rat model of Alzheimer's disease (AD). XH-NLCs were formulated utilizing hot high-pressure homogenization and probe sonication techniques. The processing parameters, including total lipid-to-drug ratio, solid lipid-to-liquid lipid ratio, and surfactant concentration were optimized using the Box-Behnken design. Optimized liquid XH-NLCs showed a mean particle size of 81.48 ± 4.02 nm, zeta potential of −16.3 ± 4.58 mV, and entrapment efficiency of 68 ± 2.46 %, whereas, the reconstituted S-XH-NLCs (post-lyophilization) showed 113.8 nm particle size, −20.3 mV zeta potential, and 65 % entrapment efficiency. Scanning electron microscopy and differential scanning calorimetry revealed that XH was molecularly dispersed in the amorphous state within the NLCs matrix. XH-NLCs showed enhanced in-vitro drug release by 4.93-fold as compared to its naïve form. Pharmacokinetic analysis revealed a 24.7-fold increase in Cmax and a 6.25-fold increase in AUC0-t (2497.37 ng/mL·h) for XH in NLCs, with 11.3-fold higher brain availability. Pharmacodynamic evaluations indicated significant improvements in cognitive and motor functions, as well as reductions in AChE, Aβ, oxidative stress, and neuroinflammation, demonstrating the potential of XH-NLCs in AD therapy. These results highlight the potential of XH-NLCs for further development as a therapeutic strategy for AD.

23. Kaushika Patel, Paresh Patel & Ruchi Pathak



The Future of Medicine: AI and ML Driven Drug Discovery Advancements, Current Topics in Medicinal Chemistry, Bentham Scopus: Q2, Web of Science

Abstract: The field of drug design has evolved from conventional approaches relying on empirical evidence to advanced approaches such as Computer-Aided Drug Design (CADD). It aids in intricate phases of drug discovery, such as target discovery, lead optimization, and clinical trials, establishing a safe, rapid, and cost-effective system. Structure based drug design (SBDD), Ligand based drug design (LBDD), and Pharmacophore modelling, being the most utilized techniques of CADD, play a major role in establishing the road map necessary for the discovery. Artificial intelligence (AI) and Machine learning (ML) have improved the field with the incorporation of big data and, thereby, enhancing the efficacy and accuracy of the CADD. Deep Learning (DL), a part of AI helps in processing complex and non-linear data and thereby decreases complexity, increases resource utilization and enhances drug-target interaction prediction. These approaches have revolutionized healthcare by enhancing diagnostic precision and predicting the behavior of drugs. Currently, AI/ML approach has become crucial for rapidly discovering novel insights and transforming healthcare areas lie diagnostics, clinical research, and critical care. In the case of the drug development area, techniques like PBPK modeling and advanced nano-QSAR

enhance drug behavior understanding and predict nano material toxicity if any, leading to safe and effective therapeutic predictions and interventions. The advancement of AI/ML techniques will bring accuracy, efficacy, and more patient-tailored responses to the drug development field.

24. Kaushika Patel

Adjuvants in Licensed Vaccines
Emerging Pathways of Vaccine Adjuvants: A Nonspecific Stimulant of the Immune System, John Wiley & Sons
Scopus indexed

Abstract: In the present circumstances, immunization is crucial as it ensures our safety and shields us from harmful pathogens. Although there have been significant achievements in the area of vaccinology, there is still room for progress in the development of safe and optimal vaccinations to combat life-threatening illnesses. Additionally, there is a need to enhance the effectiveness of current vaccines by addressing issues related to partial or variable protection. Therefore, it is quite likely that the potential of a vaccine may be enhanced by using innovative adjuvants, which can significantly enhance the immune response. The use of new adjuvants in vaccine formulation might potentially aid in combating diseases with significant antigenic diversity. Nevertheless, the approval of human-compatible adjuvants has been limited owing to safety and toxicity constraints. This study primarily highlights the need for novel and enhanced vaccinations, as well as the definition and requirement for adjuvants. This work explores several adjuvants used in vaccine development, including their mechanisms and targets. It puts a particular emphasis on the adjuvants used in COVID-19 and cancer vaccines. The adjuvants used in licensed vaccines are also summarized. The review has also included several advanced vaccination techniques and the toxicities associated with adjuvants.

25. Priya Shah

Mechanistic insights into the anti-ulcerative effects of Avipattikar churna: A network pharmacology and experimental approach, Proceedings of the Indian National Science Academy, Springer Nature
Scopus: Q2, Web of Science

Abstract: Avipattikar Churna is prescribed for gastric conditions in Ayurveda. The herbs present in churna have anti-inflammatory, antioxidant, and cytoprotective activities and the sugar part of churna is

responsible for acid neutralization. We investigated the mechanism of action of Avipattikar churna against peptic ulcer using network pharmacology, in-vitro, ex-vivo and in vivo studies. Network pharmacology of churna was performed to identify the protein and pathways targeted by phytoconstituents of churna. In the phytochemical analysis the quantification of phenols, flavonoids, tannins, in vitro studies including acid neutralizing capacity, ex-vivo studies including proton pump inhibition and antioxidant activities of three extracts of churna (aqueous, alcoholic and hydro-alcoholic) and in vivo studies were performed. Network analysis revealed Quercetin, Ellagic acid, Turpetholic acid, Copaene, and Eugenol having activity in peptic ulcer. The quantitative estimation of total phenols, flavonoids and tannins were found to be 12.467 ± 0.273% w/w, 4.734 ± 0.091% w/w, and 8.0368 ± 0.138% w/w respectively. The proton pump inhibition activity of all three extracts was concentration-dependent, with the hydroalcohol extract being the most effective at 250 ug/mL. Aqueous and hydroalcoholic extracts were found to improve levels of SOD, catalase and glutathione. Additionally, in-vivo studies revealed decrease in NFκB, TNF-α, and IL-6 post treatment. The ulcer protective effect was supported by histopathology results. From the experimental data we conclude that Avipattikar churna may act via various mechanisms including acid neutralization, proton pump inhibition and antioxidant activity. Further in vivo studies suggest that churna may suppress the NF-κB signaling pathway, which is associated with significant reductions in TNF-α and IL-6 levels, decreased inflammatory cell infiltration, promotion of ulcer healing, and induction of apoptosis.

26. Tosha Pandya

Adjuvants for Non-Invasive Routes of Vaccine Delivery
Emerging Pathways of Vaccine Adjuvants: A Nonspecific Stimulant of the Immune System John Wiley & Sons
Scopus indexed

Abstract: Preventive medicine has witnessed revolutionary success and has helped sustain many lives against infectious diseases through vaccines. Although vaccines have been a part of the preventive medicine since long, the advancements in vaccine technology became more evident and have gained significant attention of the scientific community only after the COVID-19 pandemic. Despite the advancements, the needle-free and painless delivery of vaccines via non-invasive routes (oral, transcutaneous, intranasal etc.) remains challenging due to physiological and biological barriers that inherently impede their efficacy, immunogenicity, and safety. However, choosing a right immune-stimulatory vaccine adjuvant can facilitate vaccine delivery via non-invasive routes while maintaining or enhancing its efficacy. This chapter focuses to provide a comprehensive overview along with the advantages and limitations of the adjuvants that have been explored for non-invasive vaccine delivery. The chapter also discusses elaborately about the mechanisms by which they elicit optimal, long-lasting, and robust mucosal and systemic immune response. Some of the most recently explored non-invasive vaccine delivery adjuvants have been discussed upon in this chapter.

The need to address scientifically gray areas that need utmost attention for efficient utilization of adjuvants in non-invasive vaccine delivery development like the selection of right adjuvant, dosage in normal and special population, safety concerns, regulatory aspects and policy aspects for the use of has also been highlighted. The chapter can help researchers pave way toward the development of next-generation vaccines by easing the administration of vaccines via non-invasive routes, prolonging its life cycle, accessibility, efficacy and stability.

27. Vanessa James

Network-based Methods in Drug Discovery, Computational Methods for Rational Drug Design, Wiley
Scopus indexed

Abstract: The current process of drug development, which focuses on a single target, one disease, and one drug, has serious flaws in terms of safety, efficacy, and sustainability. It has only now been realized how valuable network biology and polypharmacology (multi-targeted therapy) methods are for integrating omics data and creating medications that target numerous targets. Network pharma-cology is a revolutionary paradigm that emerged from the merging of these two approaches; it studies the effects of drugs on the interactome and the disease at some levels [1-3]. The complex formulations used in Ayurveda, the traditional Indian medicine system, include a wide variety of ingredients and bioactive compounds. However, the mechanisms and scientific thinking underly-ing these formulations have hardly received any research attention. To better understand the possible effects, indications, and mechanisms of medications, evidence-based Ayurveda can make use of natural product approaches. In today's pharmaceutical landscape, natural products play a significant role, particularly in disease treatment [4, 5]. A wealth of valuable resources have been bestowed upon humanity by natural products throughout the millennia. To assess the pharmaco-logical efficacy of herbal treatments, drug discovery has developed high-throughput approaches based on network pharmacology. This chapter provides a comprehensive overview of the technique, significance, and application of network pharmacology to cure a wide spectrum of complicated disorders using Indian traditional medicines.

28. Priya Shah

Insight on Flavonoids and Flavonoidsincorporated Nano-formulations in the Management of Diabetes Mellitus, Current Diabetes Reviews, Bentham Science Publishers
Scopus-Q3, Web of Science

Abstract: Diabetes mellitus is a worldwide health challenge and imposes a considerable strain on healthcare systems. By 2035, it is anticipated that around 592 million adults will be impacted by diabetes as a result of causes like aging, rapid population expansion, urbanization, obesity, lifestyle modifications, and heightened intake of calorie-dense, fatty, and fast meals. Despite the availability of several pharmaceutical therapies, they often come with higher expenses and adverse side effects, making them inaccessible to a large portion of the population. Bioactive compounds, especially flavonoids, are emerging as potential alternatives for diabetes management. Flavonoids, a category of polyphenolic chemicals included in fruits, vegetables, and various plant- derived foods, provide numerous therapeutic advantages. In addition to their glucose-lowering benefits, they increase antioxidant defence, improve insulin efficacy, and diminish the risk of cardiovascular problems. The clinical application of flavonoids is hindered by issues like poor solubility, low bioavailability, and complicated metabolism. This review explores the integration of nanotechnology- based delivery technologies to address these limitations. Advanced nano-formulations, such as polymeric nanoparticles, liposomes, micelles, and solid lipid nanoparticles, improve the solubility, stability, and absorption of flavonoids while facilitating targeted delivery and prolonged therapeutic benefits. The review highlights the efficacy of flavonoid-based nano-formulations in efficiently managing diabetes mellitus and its related problems. Moreover, it highlights the need for ongoing research to enhance these formulations and explore the molecular pathways that underlie their antidiabetic efficacy. This approach demonstrates the significance of nanotechnology in transforming diabetes care and enhancing patient outcomes.

29. Bindu Yadav

Synthetic Composites for 3D Bioprinting Applications, Handbook of 3D Printing in Biomedical Applications, CRC Press
Scopus indexed

For tissue engineering and regenerative medicine, synthetic composites provide improved functionality and adaptability, revolutionising three-dimensional (3D) bioprinting. This chapter examines the design, characteristics, and uses of synthetic composites in relation to the development of bioprinting technologies. It discusses many kinds of synthetic composites, such as materials based on polymers, ceramics, and hybrids, and highlights their adaptability to complex tissue architectures, biocompatibility, and mechanical strength. Important advancements in material formulation are examined, including the use of bioactive chemicals and the adjustment of printing conditions. The chapter also discusses current developments and difficulties in fusing synthetic composites with biological systems in an effort to enhance tissue regeneration, repair, and growth. This chapter gives a thorough review of how synthetic composites are influencing 3D printing going forward by looking at both existing and upcoming research.

30. Dipa Israni

Zebrafish-Based Parkinson's Disease Models: Unveiling Genetic Mechanisms and Therapeutic Pathways, CNS Neurol Disord Drug Targets, Bentham Science Publishers
Scopus- Q2, Web of Science

Abstract: The zebrafish (Danio rerio) is widely utilised as a live vertebrate model in research on neurological development and nervous system diseases. This species exhibits various distinctive attributes that render it well-suited for investigating neurological disorders such as Parkinson's disease (PD). Zebrafish and humans have a genetic similarity of around 70%, and approximately 84% of the genes associated with human diseases have zebrafish equivalents. The genetic similarities and presence of neurotransmitters like dopamine allow scientists to study PD genes and proteins. Zebrafish are often challenged with neurotoxins to induce Parkinsonian symptoms, allowing researchers to evaluate attendant biochemical pathways. Zebrafish can also repair damaged organs, increasing their potential value in PD research. Because of their regenerative capacity and genetic resemblance to humans, these species can be used to study dopamine neurodegeneration and prospective PD treatments. In addition to PD, zebrafish are helpful models for studying Huntington's disease, Alzheimer's disease, epilepsy, depression, schizophrenia, and anxiety disorders. This article emphasizes significant findings of relevance to PD using the zebrafish model, describing its challenges and benefits. The investigation of key genes, protein pathways, and neurotoxins provides the opportunity to facilitate understanding of the role of dopamine neurotransmitters in PD and expedite the development of potentially promising therapeutic strategies.

31. Paresh Patel

Synthesis, molecular docking, molecular dynamic simulation and biological evaluation of novel 3,4-dihydropyridine derivatives as potent antituberculosis agents, Molecular Diversity, Springer Nature
Scopus: Q2, Web of Science

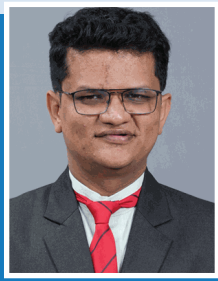
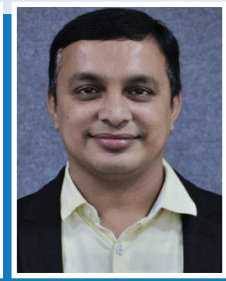
Abstract: Antibiotic resistance is an increasing threat to global public health. Developing new antibiotics and alternative treatments is crucial for combating resistant strains and reducing the global health burden. Hence, we synthesized and evaluated the antitubercular potential of dihydropyridine derivatives. A simplified Biginelli condensation method was employed to synthesize novel3, 4-dihydropyrimidine derivatives (4a–4m) via a one-pot three-component reaction using various substituted benzaldehydes. Reaction completion was monitored via thin-layer chromatography. The structures of the compounds were confirmed by FT-IR, mass spectrometry, 1H NMR, and 13C NMR spectroscopy, and melting points were determined by differential scanning calorimetry. ADMET screening was performed for all synthesized compounds. Selected compounds were tested for their antibacterial and anti-tubercular activity against gram-positive and gram-negative bacteria. ADMET screening identified eight potential compounds: 4c, 4e, 4f, 4g, 4i, 4j, 4k, and 4m. The literature emphasized DprE1 as a critical target for anti-tubercular activity. Molecular docking studies revealed promising binding affinities for compounds 4g (− 7.67), 4d (− 7.316), 4e (− 7.062), and 4c (− 7.042) against DprE1. Furthermore, to study the binding stability and interaction patterns of protein–ligand complexes, a molecular dynamics simulation was performed. The stability of the protein–ligand complex was confirmed by low protein RMSD values and minimal fluctuations in ligand RMSD, indicating a stable binding pose throughout the 200 ns simulation. These compounds also exhibited significant antibacterial activity against gram-positive and gram-negative bacteria compared to standard drugs. In-vitro antitubercular assays against the H37Rv strain demonstrated moderate to notable efficacy relative to the standard reference drug. The findings suggest that these compounds could serve as promising drug candidates. Further development may lead to their use as effective antituberculosis agents in future research.

32. Kaushika Patel, Shweta Gandhi & Shreeraj Shah

Recent Breakthroughs in Exosome-Based Drug Delivery: A Comprehensive Review for Cancer Therapy, Cancer Biother Radiopharm, Mary Ann Liebert Inc.
Scopus: Q2, Web of Science

Recently, exosomes, or "natural nanoparticles," have been considered as potential drug delivery methods. Due to exosome carriers' natural properties, exosome-mediated drug delivery systems (DDSs) are efficient cancer treatments. Exosomes, small membrane vesicles from many cell types, can transfer phytoconstituents, proteins, nucleic acids, and small molecule medicines across biological boundaries. Recent DDS advances have improved this potential using plant-derived exosomes (PDEs), which are biocompatible and low toxic. PDEs have anticancer effects, especially in the context of conventional treatment resistance, untargeted toxicity, and response variability. This review fills a gap by discussing the latest findings and offering new perspectives on exosome drug delivery in cancer. The study summarizes isolation and loading approaches such as ultracentrifugation and immunological isolation and the characterization parameters for the formulation of exosomes. The exosome-based DDSs are discussed in depth, along with the emphasis on PDEs. The article highlights emerging trends and challenges, including molecular targets and ongoing clinical trials, during the past decade that are critically relevant to the current scenario. Nanotechnology and personalized medicine could improve and lower the cost of exosome-mediated cancer treatment. While the preclinical data have been encouraging, clinical applications of exosome-based therapies are continuing to evolve in its early stages, and some of the problems include scalability, purification, and regulatory compliance.

33. Darshil Shah, Dilip Maheshwari, Shreeraj Shah & Jignesh Shah

SolPred: A machine learning based mobile phase composition prediction tool for the pharmaceutical compounds analysis in RP-HPLC, Journal of Liquid Chromatography and Related Technologies, Taylor and Francis Ltd.
Scopus: Q3, Web of Science

Abstract: Artificial intelligence (AI) has gained tremendous growth in chromatography in recent years. Random Forest Classifier (RFC) and Artificial Neural Network models (ANN) were applied to predict the most suitable mobile phase composition for pharmaceutical compounds. To determine the optimal solvent composition for the test compound, RFC was applied to a dataset of molecular descriptors. The RFC utilized the molecular descriptors optimally to select the solvent suitability for the test compounds, while the ANN predicted similar actual and predicted mobile phases in the training set. The model demonstrated high predictive accuracy, with strong correlations for acetonitrile ($r = 0.944$), methanol ($r = 0.961$), water ($r = 0.983$), and buffer ($r = 0.918$).

The model also obtained coefficient of determination (R2 = 0.902). The ANN model was used to predict the mobile phases of the test compounds. Analytical trials were performed using the predicted mobile phase in isocratic proportion for the test compounds on a C18 column with 1.0 mL/min flowrate. The resulting chromatograms were evaluated to validate the predicted mobile phase. By enhancing the developed method, predictive mobile phase compositions can advance the future of pharmaceutical analysis and serve as a leveraging tool for RP-HPLC analysis.

34. Bindu Kumari Yadav, Shreeraj Shah, Sweta Bhalani & Ayan Rangwala



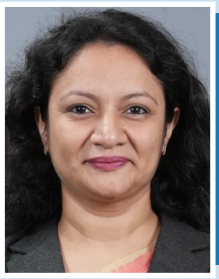

Budding trends in nanofibers for topical delivery of therapeutics for the treatment of vitiligo
Journal of Biomaterials Science, Polymer Edition, Taylor and Francis Ltd.
Scopus: Q2, Web of Science

Abstract: Nanofibers have been investigated for the possible topical delivery of medicines, one of the nanostructure-based drug delivery strategies produced by nanotechnology. Filaments or thread-like structures in the nanometer size range are called nanofibers, and they are made from a variety of polymers, including synthetic and natural polymers, or a combination of both. The polymers, preparation methods, and design specifications all affect the nanofibers' diameter or size. When creating nanofibers, the four main processing methods phase separation, self-assembly, template synthesis, and electrospinning are most frequently employed. The morphology and characterization parameters of nanofibers require a multimethod approach due to their unique structure. Large-scale manufacturing of nanofibers with the required qualities is still problematic, though, because popular electrospinning techniques have drawbacks like low yield, high voltage requirements, and trouble accomplishing in situ nanofiber deposition on different substrates. This study focuses on the latest clinical trials, applications, production techniques, and patents of nanofibers for vitiligo. They are becoming more popular as drug delivery vehicles, and the skin's enormous surface area makes it a potentially effective method for topical medication solutions for a variety of skin conditions, including vitiligo, psoriasis, skin cancer, wounds, bacterial and fungal infections, etc.

Research Publications

School of Management, L.J. Institute of Management Studies

1. Sweety Shah



Investors' Behavioral Intention in Mutual Fund Investments in India: Applicability of Theory of Planned Behavior, Asia-Pacific Financial Markets, Springer
Scopus: Q3, ABS: 2, ABDC: C

Abstract: This study examines the impact of subjective norm, attitude and perceived control behavior (financial literacy) on investors' behavioral intention to invest in mutual funds based on the theory of planned behavior. We have applied Structural Equation Modelling - path analysis to examine the influence of financial literacy, subjective norms, and attitude on the behavioral investment intention of mutual fund investors. The study's findings indicate that Investors' choice to invest in a mutual fund is positively prejudiced by their subjective norms, attitude, and financial literacy. Subjective norms significantly influence investment decisions more than attitude and financial literacy. Age, gender, and level of education have no moderating effect on attitude, subjective norms, and financial literacy. The study is proved to be unique to the literature on behavioral finance. The study's findings are eye-opening as the investment intentions in the mutual fund are influenced by subjective norms, indirectly signaling that investors lack awareness of mutual fund investment.

2. Priya Shah & Neha Mehta

What are the drivers of millet-based food consumption in India? A Theory of Consumption Values (TCV) perspective, Journal of International Food & Agribusiness Marketing, Taylor and Francis
Scopus: Q2, ABDC: B

Abstract: Limited research explores consumer motivations for millet-based food purchases despite their rising popularity in India. Existing studies prioritize the nutritional and sustainable aspects of millets, neglecting a customer-centric perspective. This study addresses this gap by examining drivers of purchase intentions for millet-based foods. Using a mixed-methods approach, we conducted open-ended essays with consumers followed by a survey (n = 385) analyzed using structural equation modeling. We applied the Theory of Consumption Values (TCV) to understand these motivations. This research contributes a theory-driven framework for understanding millet consumption and offers practical implications for marketers by informing targeted campaigns and product development strategies.

3. Harleen Mahajan & Ranjana Dureja


Nigam Pratibha Vidyalaya – aligning new hire with the art integration philosophy, Emerald Emerging Markets Case Studies, Emerald
Scopus: Q4

Abstract: The case study exhibits the dilemma faced by a principal Mrs. Veena Gandhi in the year 2020–2022 when manpower shortage was the major challenge being faced by the government-run schools in New Delhi NCR. She inculcated inventiveness and practicality in the teaching of elementary education in Nigam Pratibha Vidyalaya. The school's philosophy was based on creating a learning environment for students so that they could express them, learn and memorize concepts, and had joyful learning. The school managed 50% of the teaching staff, as most of the teachers were promoted to Sarvodaya Vidyalaya run by the department of education in New Delhi. Whereas other teachers were not recruited for the same position which created a demand and supply gap among teaching staff. Now she was going to be retired in January 2023 and was facing a dilemma about her next successor, who could carry forward the philosophies of value-based teaching. She wanted to have such a successor who could carry forward the legacy of the school, but as the school was government-run and the appointment was seniority-wise complete freedom was not in her hands to choose the next principal. By keeping in mind, the constraints of authority and entitlement after retirement, she wanted to have the best person for the job who would understand and implement the art integration in teaching and learning.

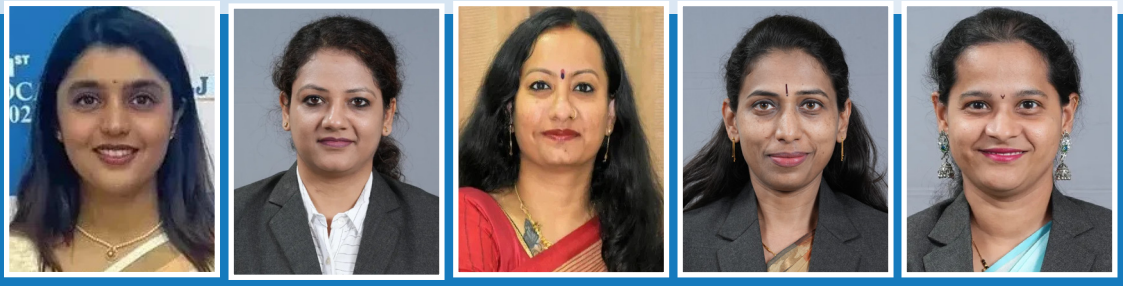
4. Harleen Mahajan

A comprehensive study on factors of work life balance and big five personality traits and their impact on perceived performance of employees, International Journal of Indian Culture and Business Management, Inderscience
Scopus indexed

Abstract: The banking industry witnessed vast changes in its schemes and policies in recent years. In order to improve employee performance, it is important to determine various factors contributing towards performance. In this research, we identified impact of work life balance and personality traits on perceived performance of employees. A theoretical structure model was created, by integrating three variables of work life balance (WLB) and five traits of personality and their impact on perceived performance. Three major variables, i.e., organizational support, work pressure, and self-development, of

WLB have been tested through exploratory factor analysis. Further, the impact of the above three variables along with the big five traits of personality have been tested on perceived performance using regression analysis. Findings show positive correlation of different factors of WLB and five traits of personality with perceived performance. This study turned out to be more fundamental in order to improve performance of employees.

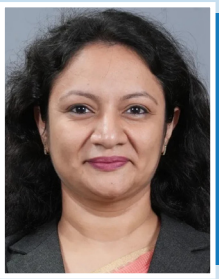
5. Priya Shah, Harleen Mahajan, Nidhi Sompura, Anitha Sunil & Rucha Naldurgakar



Consumer Decision-Making Processes Regarding Healthy Food Choices: A Systematic Literature Review and Future Research Agenda International Journal of Consumer Studies, Wiley
Scopus (Q1), Web of Science, ABS: 2 and ABDC: A

Abstract: This study systematically reviews the literature on consumer perceptions of healthy food choices, employing the ADO (Antecedents, Decisions, Outcomes) framework to analyze 118 peer-reviewed articles.The research identifies significant inconsistencies in consumer definitions and understanding, influenced by evolving scientific knowledge and diverse information cues. These challenges highlight critical research gaps and underscore the need for strategic marketing interventions and consumer segmentation based on these evolving perceptions. The review proposes a conceptual framework that elucidates the complex interplay between antecedents, decisions, and outcomes in dietary behaviors. The findings aim to empower consumers with evidence-based strategies for informed dietary choices, contributing to improved public health outcomes. By consolidating fragmented research, this study offers valuable insights for practitioners and policymakers to develop effective marketing strategies and public health initiatives that encourage healthier eating habits.

6. Sweety Shah



The Interplay of Risk Divergence, Economic Pressure, and Financial Stress in Investment Decision-Making, Journal of Wealth Management, Portfolio Management Research
Scopus: Q3, ABS: 1, ABDC: B

Abstract: This paper explores the phenomenon of "forced risk choice" behavior among investors, which is precipitated by factors such as the rising cost of living, increasing education expenses, and the minimal returns associated with risk-free securities. Based on the qualitative data gathered from investors, this study identifies the concept of risk divergence—deviation from the inherent risk tolerance of investors. The findings of this study indicate that these economic pressures drive individuals to undertake investments that are riskier and deviate from their inherent risk-tolerance levels. The misalignment between inherent and exhibited risk tolerance fosters a state of persistent investment stress, making investors more vulnerable to adverse market conditions. The forced adoption of higher-risk strategies to meet financial goals introduces a different dynamic in risk-tolerance behavior, often culminating in irrational decision-making and consequent heightened financial anxiety. The insights developed through this research will be helpful to policymakers, financial advisors, and investors. The discussions in this study contribute to this discourse on financial planning and risk management by focusing on finding strategies to counter forced risk behavior, while promoting more sustainable investment behaviors.

7. Siddharth Das

Reaching Sustainable Development Goals: The Contribution of Finance E-Financial Strategies for Advancing Sustainable Development, Springer Cham
Scopus

Abstract: The Sustainable Development Goals provide the framework for constructing a more sustainable and better future for everybody. The environment, inequality, economic expansion, climate change, poverty, justice, and peace are some of the topics they address. The UN General Assembly, on September 25, 2015, adopted both the 2030 'Agenda for Sustainable Development' and the 'Sustainable Development Goals'. All 193 of the General Assembly's members, both developed and developing, have endorsed the agenda, which applies to all states.

Despite the fact that the global goals do not specifically address financial inclusion, widespread financial services availability is a crucial facilitator for several goals. With 17 SDGs that support economic growth, sound foundations are necessary for economic progress. Sound economic development includes several key elements, including universal accessibility to financial and insurance services, new technologies, readily available bank loans, and improved resource allocation. Early in the 1990s, India made a significant step forward by liberalizing its economy, and in the 2000s, India made more progress toward economic justice and social improvement by implementing a range of financial inclusion policies and programs. Any program to promote financial inclusion should have a healthy economy as both a precondition and a goal. Financial inclusion models can support both the achievement of more fundamental development goals and the growth of the economy as a whole. The distribution of financial services to underprivileged populations has been greatly aided by digital finance, whether through the use of personal computers, the internet, mobile phones, or cards connected to trustworthy Digital Payment systems. The article's goal is to examine in what way financial inclusion (FI) contributes to the accomplishment of Sustainable Development Goals (SDGs), as well as the influence of digitalization on the same.

8. Priya Shah

Conceptualization of greenwashing in the hospitality industry
International Journal of Hospitality Management, Elsevier Ltd.
Scopus-Q1, ABS & ABDC- A*

Abstract: This study aims to examine the definition and types of greenwashing in the hospitality industry from the perspective of employees. It uses qualitative research methods involving multi-stage data collection. Two waves of data—with 51 employees in the first wave and 44 in the second—were collected through open-ended essays from employees in the UK and USA. Through thematic analysis, two aggregate themes were identified: first, the definition of greenwashing, including what, why, how, and by whom it is done; and second, types of greenwashing, encompassing false claims, exaggerations, misrepresentations, and selective disclosure. The findings of this study will enable managers to develop safeguard measures to prevent greenwashing practices and promote greater transparency in green practices.

9. Sweety Shah & Bilva Desai


Mokshshil: Balancing Innovation, Growth, and Control
Ivey Publishing- Ivey Business School

Abstract: Mokshshil Services Pvt. Ltd. (Mokshshil), founded by Bilva Desai in 2016, was a Gujarat-based funeral-services enterprise known for its dignified, ritual-based offerings. In October 2023, the business had a strong presence in Ahmedabad and had reached a stage where expansion was necessary. Desai had to choose between three growth strategies: (1) accepting a private investment of ₹35 million from Viraj Mehta in exchange for a 25 per cent stake and active involvement, accelerating expansion but reducing autonomy; (2) expanding through organic growth, ensuring full control but limiting the pace of scale; or (3) employing a franchise model, enabling nationwide scalability with minimal investment but posing risks to quality control.

Research Publications

L.J. Institute of Event management

1. Jaykumar Shukla

Monitoring the release of carbon at public and corporate events: Approaches, difficulties, and ideal conditions, International Journal of creative research thoughts
UGC listed

Abstract: This abstract discusses the concept of carbon footprints in public events and the methodologies used to analyze and mitigate them. It emphasizes the importance of understanding the environmental impact of events and adopting eco-friendly practices. The abstract references studies like Julie's Bicycle guide and the Glastonbury Festival's carbon footprint, and highlights the need for interdisciplinary research, stakeholder collaboration, and data-sharing initiatives. It also discusses the impacts of increased carbon emissions on air quality, climate change, public health, and socio-economic factors.

Research Publications

School of Engineering and Technology
L.J. Institute of Engineering and Technology

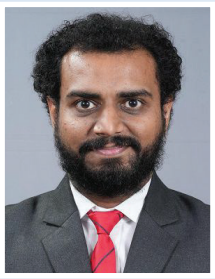
1. Hardik Joshi

Analysis of Novel Fractional Order Plastic Waste Model and ITS Effects on Air Pollution with Treatment Mechanism, Journal of Applied Analysis and Computation
Scopus: Q3, Web of Science

Abstract: In the present era, the plastic waste problem is a global challenge due to its massive production. The post-use of waste plastic influences the earth's environment, human life, marine life, and ocean. Thus, there is a necessity to develop good strategies for the exclusion of plastic waste. Because of this, an extension is paid on the procedure of burning and recycling plastic waste.

As a case study, the four-dimensional systems of ordinary differential equations are developed to estimate the effects of burned plastic and recycled plastic on air pollution. The well-posedness and qualitative properties are discussed. The reproduction number of the plastic waste model and local and global stability are discussed in detail. The effect of influence parameters is systematically investigated by numerical experiments. The numerical results provide a better strategy to restrict air pollution and ensure a good climate, earth's environment, and healthy human life.

2. Mihir Mistry & Prexa Parikh



Insights into evacuated glass tube collectors-assisted solar desalination systems: Pathways for large scale applications for potable water provision, Solar Energy, Elsevier
Scopus: Q1, Web of Science

Abstract: Drinking water is an imperative need for every species on the earth. Over the past two decades, Evacuated Glass Tube Collector (EGTC) has been extensively used in solar stills to improve thermal performance of these systems. Moreover, researchers have explored various methods to increase fresh water production by integrating various configurations of solar collectors with distillers. Accordingly, EGTC-based solar distillers are promising candidates for field applications because of key design features, including an effective vacuum between the absorber and glass tube, which reduces heat loss and enhances the productivity of the solar distiller. Moreover, research domain of solar distiller secures limited field applications and studies of EGTC-based desalination systems. Hence, the article aims to reviews in-depth designs of solar stills coupled with EGTCs, mathematical models used to estimate productivity with energy and exergy efficiencies, and case studies from water-scarce regions

for field implementation. Solar stills coupled with EGTCs have shown 10.4 % to 25.4 % higher yield and up to 31.05 % higher efficiency compared to those coupled with Flat Plate Collectors (FPC). A maximum saline water temperature of 94 °C and a daily yield of 16.98 kg/m2 were achieved for an EGTC-based solar water heater integrated solar still. Furthermore, potential thrust water scarce areas and communities are identified for which EGTC-based system is feasible to implement. This being said that implementation of EGTC-based solar distillers realized a minimum production cost of 0.0044 USD per liter vis-à-vis it strongly complies with United Nations' Sustainable Development Goal in these areas.

3. Hardik Joshi

EOQ model for deteriorating items with fuzzy demand and finite horizon under inflation effects, Discrete and Continuous Dynamical Systems - Series S, American Institute of Mathematical Sciences
Scopus: Q2, Web of Science

Abstract: In this research, we explore an innovative finite horizon Economic Order Quantity (EOQ) model for items that deteriorate over time, incorporating the effects of inflation and fuzzy demand characteristics. By applying the centroid method, we translate the fuzzy objective function into a precise, crisp equivalent. Our study introduces a novel approach to determining the optimal replenishment frequency using advanced calculus techniques. To validate the model, we present detailed numerical examples and conduct a sensitivity analysis to examine how variations in model parameters affect the outcomes. This study advances the field by integrating fuzzy logic with economic inventory models and provides insights into managing inventory with deteriorating items in an inflationary environment. Inflation plays a crucial role in developing inventory models, significantly influencing overall economic health. It leads to a persistent decline in the temporal value of money or a long-term increase in general prices. Rapid inflation has unavoidable effects on corporate organizations, and ignoring it can result in suboptimal solutions. Recognizing the importance of inflation in production management and inventory systems, Buzacott and Bierman and Thomas developed EOQ models incorporating inflation effects on costs.

4. Hardik Joshi

Mathematical Modeling of Middle East Respiratory Syndrome Coronavirus with Bifurcation Analysis, Contemporary Mathematics (Singapore), Universal Wiser Publisher
Scopus: Q4

Abstract: The Middle East respiratory syndrome is a viral respiratory illness. It is caused by a common type of virus called coronavirus. The main objective of the present work, we develop a mathematical model for the transmission dynamics of the Middle East respiratory syndrome coronavirus (MERS-CoV) disease. To assess the transmissibility of the MERS-CoV, we calculate the basic reproduction number R0. Furthermore, the existence of the backward bifurcation for different parameters is presented. The sensitivity analysis is presented to analyze the importance of various epidemic parameters. Stability analysis for the model is examined to provide stability conditions. Finally, we present the numerical simulations of the proposed model to support our analytical findings.

5. Hardik Joshi

Calcium Signaling and Neurocognition, Handbook of the Biology and Pathology of Mental Disorders, Springer Cham
Scopus indexed

Abstract: Calcium signaling controls and manages calcium activities such as the initialization of calcium, sequestration and extrusion, calcium-binding proteins, homeostasis, and the majority of cellular pathways. Calcium signals and signaling pathways are activated through intracellular, extracellular, and coordinated activity of intracellular and extracellular components of calcium families. This cellular phenomenon is supervised by the temporal and spatial concentration levels of calcium ions. The overstimulation and dysfunction in spatiotemporal activity trigger various diseases of the nervous system and neurocognition state. To date, the precise cause of neurocognition is poorly known, and thus, understanding the role of calcium signaling that can be transferred from a cellular mechanism into a neurocognition state is important for controlling and managing disease levels.

6. Dharam Unadkat

Comparison of Conventional Method with Elastoplastic Finite Element Analysis for Anchored Diaphragm Wall as Excavation Support System, Lecture Notes in Civil Engineering, Springer
Scopus: Q4

Abstract: In today's era of the developing world, increase in population in the metropolitan cities have brought the need for multi-complex solution in civil engineering field, which used to result in maximum dependency to computer-depended software. Conventional as well as numerical analysis and parametric studies are required to represent the behaviors of the soil as well as retaining structure. Hence, the objectives are to investigate the effect of different parameters on retaining structures (anchored diaphragm wall) and comparing the analysis of conventional method using Geo5 software using finite element method (FEM) using Plaxis-2D software. It is noticed that for serviceability consideration, the conventional design method is unable to consider various parameters. So, to observe the structural behavior and the response of wall, the finite element method (FEM) is used to perform the numerical modeling. The parameters used in the study includes the depth of excavation and soil type. To achieve the objective of this study, these parameters are used to conduct the series of conventional analysis and finite element analysis (FEA). Results of these analysis were observed in terms of factor of safety (FOS), horizontal displacement, shear force, and bending moments induced in the anchored diaphragm wall.

7. Hardik Joshi

Dynamic analysis of fractal–fractional cancer model under chemotherapy drug with generalized Mittag-Leffler kernel, Computer Methods and Programs in Biomedicine, Elsevier
Scopus: Q1, Web of Science

Abstract: Cancer's complex and multifaceted nature makes it challenging to identify unique molecular and pathophysiological signatures, thereby hindering the development of effective therapies. This paper presents a novel fractal–fractional cancer model to study the complex interplay among stem cells, effectors cells, and tumor cells in the presence and absence of chemotherapy. The cancer model with effective treatment through chemotherapy drugs is considered and discussed in detail. The numerical method for the fractal–fractional cancer model with a generalized Mittag-Leffler kernel is presented. The Routh–Hurwitz stability criteria are applied to confirm the local asymptotically stability of an endemic equilibrium points of the cancer model without treatment and with effective treatment under some conditions. The existence and uniqueness criteria of the fractal–fractional cancer model is derived. Furthermore, the stability analysis of the fractal–fractional cancer model is performed. The temporal concentration pattern of stem cells, effectors cells, tumor cells, and chemotherapy drugs are procured. The usage of chemotherapy drugs kills the tumor cells or decreases their density over time and as a consequence takes a longer time to reach to equilibrium point. The decay rate of stem cells and tumor cells plays a crucial role in cancer dynamics. The notable role of fractal dimensions along with fractional order is observed in capturing the cancer cell concentration.

8. Hardik Joshi

Numerical Analysis of Time-Fractional Cancer Models with Different Types of Net Killing Rate, Mathematics, multidisciplinary Digital Publishing Institute (MDPI)
Scopus: Q2, Web of Science

Abstract: This study introduces a novel approach to modeling cancer tumor dynamics within a fractional framework, emphasizing the critical role of the net killing rate in determining tumor growth or decay. We explore a generalized cancer model where the net killing rate is considered across three domains: time-dependent, position-dependent, and concentration-dependent. The primary objective is to derive an analytical solution for time-fractional cancer models using the Residual Power Series Method (RPSM), a technique not previously applied in this conformable context. Traditional methods for solving fractional-order differential models face challenges such as perturbations, complex simplifications, discretization issues, and restrictive assumptions. In contrast, the RPSM overcomes these limitations by offering a robust solution that reduces both complexity and computational effort. The method provides exact analytical solutions through a convergence series and reliable numerical approximations when needed, making it a versatile tool for simulating fractional-order cancer models. Graphical representations of the approximate solutions illustrate the method's effectiveness and applicability. The findings highlight the RPSM's potential to advance cancer treatment strategies by providing a more precise understanding of tumor dynamics in a fractional context. This work contributes to both theoretical and practical advancements in cancer research and lays the groundwork for more accurate and efficient modeling of cancer dynamics, ultimately aiding in the development of optimal treatment strategies.

9. Hardik Joshi

Chaotic dynamics of a cancer model with singular and non-singular kernel, Discrete and Continuous Dynamical Systems - Series S (DCDS-S), American Institute of Mathematical Sciences
Scopus: Q2, Web of Science

Abstract: In this paper, the chaos and chaotic dynamics of cancer cells are studied by using singular and non-singular kernel operators. A deterministic cancer model is considered that shows the interaction between normal cells, tumor cells, and effectors immune cells. The analysis, existence, and uniqueness of the cancer model are derived for singular and non-singular kernel operators by using fixed point and Picard–Lindelof criteria.

The numerical solution of the cancer model is provided for singular and non-singular kernel operators. The time series and phase space evolution of the different cells is obtained to examine the periodic, chaotic behavior under the influence of various biological situations. The numerical result highlights the substantial role of model parameters, singular, and non-singular kernels in the transmission dynamics of cancer cells.

10. Hardik Joshi

Preface: Modelling & Analysis of Biological & Biophysical Processes with Applications, Discrete and Continuous Dynamical Systems - Series S (DCDS-S), American Institute of Mathematical Sciences
Scopus: Q2, Web of Science

Abstract: The biological and biophysical process is essential to study the function and structure of cell processes, human organisms, animals, plants, and environment-related problems. The process is dynamic and continuously changes its behavior over time and space and subtle disruptions may introduce flaws into natural behaviors or might lead to several disease conditions. In most cases, these types of processes are represented by a system of ordinary or partial differential equations. A mathematical model is a great framework for understanding the dynamics and kinetics of biological and biophysical processes and simultaneously provides answers to large-scale problems. Hence, for the development of new techniques, understanding, and administering the dynamic processes, this special issue aims to showcase an application of biological and biophysical problems and to address the situation by developing a mathematical model. This special issue is devoted to the problems of natural science, health science, biophysics, medical physics, modelling of dynamic processes, and real-world application of biological, biophysical, chaotic, and dynamic processes.

11. Hardik Joshi

Computational Modeling of Calcium Dynamics for Cholangiocyte Cells Based on Caputo Fractional Derivative, Computational Modeling and sustainable Energy (ICCMSE 2023)- Springer
Scopus indexed

Abstract: Calcium signaling is the requisite signaling process in most types of cells such as astrocytes, neurons, hepatocytes, cholangiocytes, etc. They regulate plenty of cellular activities in

cholangiocyte cells that are responsible for the healthy signaling process. A dysregulation in the signaling process invites the pathogenesis of diseases and cholestatic disorders. The number of experimental studies reported in the past reveal the cellular mechanism and examine the role of various entities. Still, the precise role of each cellular entity in the cholangiocyte cell is poorly understood. Almost no mathematical attempt has been reported to examine the role of calcium in the cholangiocyte cell by fractional order approach. In the present study, a fractional order mathematical model is proposed for calcium dynamics and buffer to examine its role in the cholangiocyte cell. The necessary bio-physiological parameters are taken to develop a model in the form of a fractional reaction-diffusion model. The boundary and initial condition are framed as the physiological function of cholangiocyte cells. The model is simulated numerically for various physiological parameters and fractional order to validate the results and identify the precise role of the entity in the signaling process.

12. Hitesh Raiyani

Mechanical Properties of Natural Bamboo Fiber Reinforced Fiber Metal Laminates with Different Layout Configurations, International Journal of Mechanical Engineering, Seventh Sense Research Group Scopus: Q4

Abstract: The hybrid composite materials FMLs are known as Fiber Metal Laminates. FMLs are developed by laminating alternate aluminium alloy or metal and composite layers to improve the mechanical properties and material fracture characteristics. Recently, due to the globalization of business, new requirements like lightweight, high strength, high fracture toughness, and safety, the development of new materials that have superior properties to fulfil the current demands of aerospace industries and automation industries have reached a peak. Also, there is a peak demand for natural fiber in the manufacturing of FMLs. This presented work of research considered the development of FMLs with natural bamboo fiber, Al-2024-T3 aluminium alloy, epoxy as a resin, and the testing of FMLs for mechanical properties of FMLS. Also, development and testing FMLs with different fiber orientations to study the effect of fiber orientation on mechanical properties. Natural bamboo fiber metal laminates are developed by hand layout of an alternate layer of Al-2024-T3 aluminium alloy and a composite layer of epoxy-bamboo fiber followed by compression in the compression moulding machine with maintain 80°C for 10 min. The Pressure of 4KN is kept for 24 hours in a compression moulding machine to press the aluminum and bamboo-epoxy composite layers. The tensile properties of bamboo FMLs are extracted using the Universal Testing Machine (UTM) per the standard ASTM D 3039 for 0° and 90° fiber orientation. The tensile strength of natural bamboo fiber metal laminates is the optimum strength between Aluminum alloy and composite material. This research paper presents an experimental investigation by tensile test to extract mechanical properties of FMLs with 0° and 90° orientation of fiber and study the fiber orientation effect on mechanical properties. The tensile strength of FMLs with 0° fiber orientation is observed as 59.52% higher than that of the FMLs with 90° orientation of fiber. The modulus of elasticity in FMLs with 0° orientation of fiber is recorded more than two times that of the 90° fiber orientation FMLs.

13. Kamaldeep Bhatia

Theoretical study of pressure dependence of superconducting state parameters of alkali metals lithium and sodium using pseudopotential Progress in Superconductivity and Cryogenics, Korea Institute of Applied Superconductivity and Cryogenics
Scopus: Q4, Web of Science

Abstract: Theoretical calculation of superconducting state parameters (SSPs) like electron-phonon coupling strength (λ), Coulomb pseudopotential (μ*), transition temperature (TC), effective interaction strength (N0V) and isotopic effect parameter (αI) of alkali metals Li and Na have been carried out in the framework of pseudopotential theory. Presently computed SSPs are found to be in good agreement with other reported results. Further, the dependence of SSPs on pressure and hence compressed volume has also been investigated by including the volume dependence of Fermi momentum (kF), Debye temperature (øD) and phonon frequency. It is found that μ*very feebly depends on compression in volume. The compressed volume at which Coulomb repulsion and attractive electron-phonon interaction are equal is known as critical volume and the corresponding pressure is known as critical pressure. At critical volume, transition temperature and effective interaction strength become zero. It is observed that the results of critical volume predicted by different approaches are in good agreement.

14. Nirali Shah

Study of molecular interaction between benzaldehyde and methanol using microwave dielectric relaxation spectroscopy and radial distribution function, Journal of Molecular Structure, Elsevier
Scopus: Q2, Web of Science

Abstract: A microwave dielectric relaxation study was conducted for mixtures of benzaldehyde (BZ) and methanol (MeOH) over a frequency range of 200 MHz to 20 GHz at seven different temperatures, ranging from 293.15 K to 323.15 K. The dielectric relaxation parameters, obtained through a fitting process, were used to examine their dependence on concentration and temperature. Thermodynamic parameters, such as Gibbs free energy (ΔG), molar enthalpy of activation (ΔH), and molar entropy of activation (ΔS), were evaluated using the temperature dependence of the dipolar relaxation time. The study provided valuable insights into the molecular interactions and dynamic behavior of the components in the binary mixture system. Additionally, a molecular dynamics (MD) simulation study was conducted on the binary mixture of BZ and MeOH to determine the Radial Distribution Function (RDF) and coordination number for different pairs of molecules and atoms, which revealed information about the binding and arrangement of the local structure.

15. Nirali Shah

Study of physicochemical and acoustical properties of benzaldehyde-methanol binary mixtures, Interactions, Springer Nature
Scopus indexed

Abstract: The study focuses on the physicochemical and acoustical properties of binary mixtures to understand molecular interactions within the mixtures. We measured the viscosity and refractive index of benzaldehyde (BZ) and methanol (MeOH) mixtures over a temperature range of 293.15 K to 323.15 K at 10 K intervals, covering various concentrations. Density and ultrasonic velocity values of mixtures in a given concentration and temperature range were sourced from the literature. The experimental data were used to evaluate excess parameters, including excess refractive index, excess molar volume, excess viscosity (ηE), and excess ultrasonic velocity (uE). These excess parameters were fitted to the Redlich-Kister polynomial equation. The analysis of these parameters provided a deeper understanding of the molecular interactions within the mixtures, thereby enhancing our knowledge of their physicochemical properties.

Research Publications

Diploma Engineering
L.J. Polytechnic

1. Mohammed Azim Shaikh

Use of Artificial Intelligence in Smart Farming for Selecting the Composition of Smart Manure, Proceedings of the 5th International Conference on Data Science, Machine Learning and Applications; Volume 1 (ICDSMLA), Springer Nature
Scopus indexed

Abstract: In rural ways, equipment, and developments, a contemporary perspective has emerged. Exactness is necessary in agribusiness to ensure location-specific management, which includes soil supplementation preparations tailored to the requirements of every crop. Even though planning is essential for increasing performance, it is critical to investigate the potential and barriers of soil as a foundation for selecting the suitable manure type, volume, and usage period to avoid composting usage instability. Farmers' reliance on senses, trial and error, concealment, and assessment considerably contains key unproductive features like performance losses, resource squandering, and increased environmental defilement because of the complication of determining the ideal preparation extent. This study explains why manure regimens must be modified to fit the needs of specific cultivars and areas while also protecting the ecology by lowering contamination produced by chemical and manure disposal. Several soil-richness management solutions, for example, the usage of adaptable study resources or foreign equipment, have encountered difficulties in terms of fetched, ease of use, and adaptation to the local area. Other options, like shipping soil to testing laboratories, are poorly planned, laborious, and contradictory. Depending on the climatic estimation, this item must be recommended depending on the growth of an artificial neural network (ANN) and indicate the estimated NPK supplementation quantities as well as the appropriate compost processing and usage schedule.

2. Mohammed Azim Shaikh

3D/4D Printed Food in the Metaverse and Web 3.0 Era: Intersecting Food, Technology, and Culture, IGI Global Scientific Publishing
Scopus indexed

Abstract: In recent years, 3D and 4D food printing technologies have emerged as groundbreaking innovations poised to revolutionize the way we produce and consume food. By leveraging advanced printing techniques and materials, 3D and 4D food printing are not only transforming the aesthetics and functionality of food but also addressing broader challenges in food production and consumption.

For example, a 4D food printer might create a food item that undergoes a transformation when exposed to heat, moisture, or other external factors. This could result in a food product that changes texture, flavor, or appearance as it is consumed or prepared. The integration of this fourth dimension adds a new layer of innovation to food printing, enabling the creation of interactive and adaptive food experiences. One of the most compelling aspects of 3D and 4D food printing is their potential to address key challenges in food production and sustainability.

3. Mohammed Azim Shaikh, Sachinkumar Patel & Ganesh Mudaliyar



Augmented Reality in Engineering Education: Enhancing 3D Visualization and Problem-Solving in Engineering Graphics, New Technological Applications in the Flipped Learning Model, 2025 - IGI Global Scientific Publishing
Scopus indexed

Abstract: Engineering Graphics is a fundamental course that requires strong spatial visualization skills to interpret 2D representations and translate them into 3D models. Traditional teaching methods often rely on static diagrams, which pose challenges for students in grasping complex geometries. This chapter explores the integration of Augmented Reality (AR) as an innovative pedagogical tool to enhance conceptual understanding and engagement in Engineering Graphics education. An AR-enabled booklet, developed at LJK University, allows students to scan 2D diagrams and interact with real-time 3D models using a mobile application. This interactive approach reduces cognitive load, improves visualization skills, and fosters an engaging learning experience. The chapter discusses the design, implementation, and impact of the AR-based system, presenting empirical findings that demonstrate its effectiveness. Future research directions including AI and expanded AR also explored. The findings contribute to the growing field of technology-enhanced learning, offering insights for educators and researchers.

4. Mohammed Azim Shaikh

The Evolution of Smart Urban Mobility with Emerging Technologies, Leveraging VANETs and Blockchain Technology for Urban Mobility, 2025 - IGI Global Scientific Publishing
Scopus indexed

Abstract: Engineering Graphics is a fundamental course that requires strong spatial visualization skills to interpret 2D representations and translate them into 3D models. Traditional teaching methods often rely on static diagrams, which pose challenges for students in grasping complex geometries. This chapter explores the integration of Augmented Reality (AR) as an innovative pedagogical tool to enhance conceptual understanding and engagement in Engineering Graphics education. An AR-enabled booklet, developed at LJ University, allows students to scan 2D diagrams and interact with real-time 3D models using a mobile application. This interactive approach reduces cognitive load, improves visualization skills, and fosters an engaging learning experience. The chapter discusses the design, implementation, and impact of the AR-based system, presenting empirical findings that demonstrate its effectiveness. Future research directions including AI and expanded AR also explored. The findings contribute to the growing field of technology-enhanced learning, offering insights for educators and researchers.

Research Publications

L.J. School of Applied Sciences

1. Chandramauly Sharma & Nirav Pandya


Side chain liquid crystalline polysiloxane hydroxamic acids and their liquid crystalline behavior, Reactive and Functional Polymers, Elsevier
Scopus: Q1, Web of Science

Abstract: The synthesis and properties of side chain polysiloxane hydroxamic acids have been described. The N-p substituted phenyl hydroxamic acids were synthesized by reacting p - allyloxy benzoyl chloride and acryloyloxy sebacoyl chloride with N-arylhydroxylamines in toluene medium, rendered basic with aqueous suspension of sodium bicarbonate at 0 °C or lower. The synthesized N-phenyl substituted hydroxamic acids were attached to poly(methylhydrosiloxane) via hydrosilylation reaction in the presence of platinum catalyst the polysiloxane hydroxamic acids were characterized by melting point, FT – IR, NMR and Mass spectral techniques. The liquid crystalline behaviour of the side chain polysiloxane hydroxamic acids with allyloxy and acryloylsebacoyloxy spacer have been studied by optical. polansed microscopy and differential scanning calorimetry. Side chain liquid crystalline polysiloxane hydroxamic acids with allyloxy spacer (N-p substituted phenyl p-[(3-polysiloxane propyloxy) benzo] hydroxamic acids, (PHA – 1 to PHA –4) show nematic phases, while the second series with acryloylsebacoyloxy spacer (N-p-substituted phenyl (3-polysiloxane propanone) octyl carbonyloxy hydroxamic acids, (PHA – 5 to PHA – 8) show nematic as well as smectic phases. The liquid crystalline behaviour of the side chain polysiloxane hydroxamic acids with allyloxy and acrylsebacoyloxy spacer have been studied.

2. Niketan Deshmukh

Optimization of cultural and nutritional conditions to enhance mycelial biomass of Cordyceps militaris using statistical approach, Brazilian Journal of Microbiology, Springer Nature
Scopus: Q3

Abstract: Cordyceps militaris is a fungus with numerous therapeutic properties that has gained worldwide popularity due to its potential health benefits. The fruiting body of this mushroom is highly expensive and takes a longer time to produce, making mycelial a sustainable and cost-effective alternative. The study investigates and optimizes cultural and nutritional conditions to maximize mycelial biomass. The initial optimization was done by the conventional single-factor approach, followed by Plackett–Burman design to screen the most significant variables, with yeast extract, temperature, and

glucose being the most significant, contributing 11.58%, 49.74%, and 27.98%, respectively, in mycelial biomass production. These variables were then optimized using response surface methodology (RSM) based on central composite design (CCD). The study observed that temperature and glucose had the highest impact on mycelial biomass, with p-values of 0.0128 and 0.0191, respectively. Under the optimized conditions, temperature 20 °C, glucose 2.5% (w/v), and yeast extract 0.8% (w/v), the maximal yield of mycelial biomass reached 547 ± 2.09 mg/100 mL, which was 1.95-fold higher than the yield in the basal medium. These findings suggest that optimizing the cultural and nutritional conditions can enhance mycelial biomass production of Cordyceps militaris, offering a sustainable and cost-effective source of this valuable fungus.

3. Chandramauli Sharma

Solvent extraction and trace determination of cadmium (II) by spectrophotometry and ICP-MS, Vietnam Journal of Chemistry
Scopus: Q3

Abstract: A novel method for the simple, selective separation and trace determination of cadmium is presented. Cadmium is extracted quantitatively at a pH value of 9.5 using 7-hydroxy-4-methylcoumarin hydroxyl amine (HMCHA) in dichloromethane, exhibiting maximum absorbance at 400 nm with a molar absorptivity (ε) of 5.0 × 104 L mol−1 cm−1 and conforming to Beer's law within the concentration range of 0.1 to 5.0 ppm. The Cd-HMCHA complex displays a characteristic yellowish-pink coloration. Determination of cadmium is accomplished via spectrophotometry and inductively coupled plasma mass spectrometry, resulting in a sensitivity enhancement of 20-fold which has a limit of detection of 1.950 ppb and a limit of quantification of 5.850 ppb. The extraction of cadmium is not affected by other ions, showing not any interference. The efficacy of this method is validated through the analysis of cadmium in National Bureau of Standard Samples.

4. Anita Sharma

Selective Cycloaddition of CO_2 to Oxiranes Over Schiff Base Cu II Complexes as Catalysts, Journal of Coordination Chemistry, Taylor and Francis
Scopus: Q3, Web of Science

Abstract: The present work reports the green catalytic activity of homogeneous Schiff base common and mixed ligand Cu II complexes for the synthesis of cyclic carbonates by cycloaddition of CO_2 to oxiranes under optimized reaction conditions to get the TON of 1.98 × 104. Both selectivity and conversion of cyclic carbonate were 99% achieved at 100 °C, 1 atmospheric pressure of CO_2, and a TBAB co-catalyst, in 12 h without solvent. [Cu(L1)2(H_2O)2]·2H_2O (1), [Cu(L2)2(H_2O)2]·2H_2O (2), and [Cu(L1L3)]·3H_2O (3) were used as catalysts; [Cu(L1L3)]·3H_2O (3) showed promising results for CO_2 fixation to oxiranes for the production of cyclic carbonates, supposedly due to mixed ligands and square planar geometry of the complex. All three complexes were synthesized in 5 h by the conventional method using methanol and characterized by NMR, FT–IR, ESI mass, UV-visible, ESR, , TGA, microelemental analysis, and magnetic susceptibility. The FT–IR and 1H NMR spectroscopic data suggest bidentate coordinating ligand via ON donors. The electronic transitions observed were 2B1g→2A1g (v1), 2B1g→2B2g (v2), and 2B1g→2Eg (v3), attributed to the tetragonally elongated octahedral geometry (distorted octahedral) around CuII for 1 and 2, while 2B1g→2B2g (v1), 2B1g→2A1g (v2), and 2B1g→2Eg (v3), from the square planar geometry around CuII for 3, supported by g values from ESR graphs, thermogravimetric weight loss of lattice and coordinated water molecules.

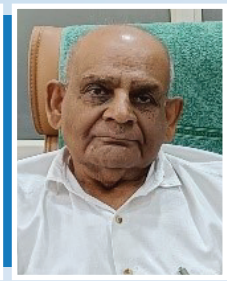
5. Dilip Maheshwari & Yadvendra Kumar Agrawal

Spectrophotometric and HPLC – MS / MS for Determination of Silodosin in Pharmaceutical Formulation, Austin Journal of Analytical and Pharmaceutical Chemistry, Austin Publishing Group

Abstract: A simple, selective, and sensitive spectrophotometric and HPLC – MS / MS method for determining microgram amounts of silodosin is described. Silodosin is converted into (R)-1-(3-hydroxypropyl)-5-(2-((2-(2-(2,2,2-trifluoroethoxy) phenoxy) ethyl) amino) propyl)-2,3-dihydroindoline-7-carboxohydroxamic acid, which gives a purple violet colour (λmax = 510 nm) with ferric chloride in an acidic medium. This forms the basis for the quantitative determination of ethionamide in both its pure form and tablet form. The influence of commonly used excipients is also studied. The HPLC determination was performed on a C18 column using an acetonitrile and water mobile phase. Both methods were validated for linearity, precision, accuracy, and robustness. The HPLC method demonstrated good linearity over the spectrophotometric range of 3–18 µg/mL

6. Nirav Pandya, Mazz Kureshi & Yadvendra Kumar Agrawal





Liquid Crystalline Behavior of Metal–Hydroxamates, Russian Journal of Physical Chemistry B
Scopus Q3, Web of Science

Abstract: In order to better understand the liquid crystalline behavior of recently synthesized metal hydroxamates, optical microscopy and differential scanning calorimetry have been employed. Analysis of their thermal stability and loss of mass by thermogravimetry and differential thermal analysis has been performed. The nematic mesophase can be observed in nearly all metal hydroxamates, with the exception of N-4-isopropoxyphenyl-4'-n-butoxycinnamohydroxamic acid complexes and iron hydroxamic acid complexes. Copper (II) hydroxamate complexes of N-4-n-butoxyphenyl-4'-n-butoxycinnamo hydroxamic acid and N-4-isoamyloxyphenyl-4'-n-butoxycinnamohydroxamic acid exhibit nematic as well as smectic behavior.

7. Yadvendra Kumar Agrawal

Online sequential separation, preconcentration, extraction, and transport of Ti, Zr, and Hf by ICP–MS and recovery from nuclear waste, Bulletin of the Chemical Society of Japan
Scopus: Q2, Web of Science

Abstract: The online inductively coupled plasma mass spectrometry preconcentration, recovery, and simultaneous trace determination of titanium (Ti), zirconium (Zr), and hafnium (Hf) from sea water is described. The limit of detection is 0.05, 0.03, and 0.33 pg mL−1 for Ti, Zr, and Hf, respectively. The limit of quantification is 1.5, 1.0 and 1.0 pg mL−1 for Ti, Zr, and Hf, respectively. The use of Coumarin Calix–[4] arene hydroxamic acid (CC4AHA) for solvent extraction and separation, and the recovery of Ti, Zr, and Hf is reported. Ti, Zr, and Hf can all be quantitatively extracted from dichloromethane solutions of CC4AHA at molarities of HCl of 6.0, 8.0, and 0.6 M; Ti, Zr, and Hf are all 1:1 bound by tetracarboxy calix [6] crown hydroxamic acid. Under controlled circumstances, a study on the liquid membrane transfer of Ti, Zr, and Hf was conducted from the source to the receiving phase.

The ability of the produced chelating extractant to simultaneously separate Ti, Zr, and Hf mixtures was investigated. Analysis of approved standard reference materials was performed to validate the process. The Ti, Zr, and Hf were recovered from sea water and effluents, and determined. The method extended from trace determination of these metals in standard samples of alloys and soil, and industrial samples.

8. Yadvendra Kumar Agrawal

Sensitive and Trace Determination of Albendazole by Spectrophotometric Method, Indian Drugs, Indian Drug Manufacturers' Association.
Scopus: Q4

Abstract: This study focuses on the interaction between albendazole and iron, forming a complex that exhibits unique properties. The albendazole-iron complex shows a maximum absorbance at 420 nm, indicating a strong interaction between the two components. This interaction results in a molar absorptivity, a measure of how strongly the complex absorbs light at a given wavelength, of 1 x 10^3 L mol^{-1} cm^{-1}. The complex follows Beer's law, a fundamental concept in spectroscopy, within a concentration range of 0.082 – 0.82 g mL-1. This means that the absorbance is directly proportional to the concentration of the complex in this range, allowing for accurate determination of albendazole concentration in a sample. The sensitivity of this method, as indicated by Sandell's sensitivity, is 0.266 g mL-1. This means that changes in concentration as small as 0.266 g mL-1 can be detected, making this method highly sensitive. Furthermore, the limit of detection (LOD), the smallest concentration that can be reliably measured, is 0.067 g mL-1. The limit of quantification (LOQ), the lowest concentration that can be accurately quantified, is 0.20 g mL-1. These values indicate that this method can reliably detect and quantify even small concentrations of albendazole. The effectiveness of this method has been demonstrated by determining albendazole in commercial tablets. This suggests that this method could be widely applicable for the analysis of albendazole in various pharmaceutical formulations, contributing to quality control and assurance in the pharmaceutical industry.

9. Nirmal Sahay

Isolation and characterization of arbuscular mycorrhiza from a newly developed L J farm at village Dumana, Viramgam, Gujarat. Plant Science
Scopus: Q3, Web of Science

Abstract: Mycorrhiza in general and arbuscular mycorrhiza in particular are the most important terrestrial fungi that evolved with the evolution of land and plants and became a part and parcel of the plant's growth and development. It is so important for plant nutrition that its density and diversity were studied worldwide in different habitats, niches and climates.

In the present study, a spore density of 1.6 to 4.04 per g of soil was observed in a semi-arid region; agroclimatic zone V of Gujarat at Dumana L J Farm, Viramgam. Nine different species of endomycorrhizae were characterized; however, species of Glomusand Acaulosporawere dominant taxa. Because there is little taxonomic diversity in such a large group of mycorrhizal fungi, it is crucial to analyze local populations that have adapted to different environments. Depending on the climate, each species may have a significant amount of genetic variation. The result shows the spore density in a developing plantation field, which was earlier mainly used for the cultivation of a local variety of cotton. Since there is no such report on the density and diversity of endomycorrhiza from this region, this primary study will serve as a baseline for the comparison of the spore density of future studies of the region/field in different plants and seasons.

10. Bignesh Thakur, Nirav Pandya & Viral Shukla

Supercritical carbon dioxide fluid extraction and trace ICP-MS determination of speciation, reconcentration transport, and recovery of vanadium with 2, 8, 14, 20-tetramethyl-11, 23-dinitro calix [4] resorcinarene-5, 17 dihydroxamic acid after microwave-assisted digestion
Scopus: Q2, Web of Science

Abstract: In order to better understand the liquid crystalline behavior of recently synthesized metal hydroxamates, optical microscopy and differential scanning calorimetry have been employed. Analysis of their thermal stability and loss of mass by thermogravimetry and differential thermal analysis has been performed. The nematic mesophase can be observed in nearly all metal hydroxamates, with the exception of N-4-isopropoxyphenyl-4'-n-butoxycinnamohydroxamic acid complexes and iron hydroxamic acid complexes. Copper(II) hydroxamate complexes of N-4-n-butoxyphenyl-4'-n-butoxycinnamo hydroxamic acid and N-4-isoamyloxyphenyl-4'-n-butoxycinnamohydroxamic acid exhibit nematic as well as smectic behavior.

Research Publications

L.J. School of Physiotherapy

1. Manali Shah & Desai Ruchi

Prevalence of Musculoskeletal Disorders among Recreational Cyclists, Medical Journal of Dr. D.Y. Patil Vidyapeeth
Scopus: Q4

Abstract: Recreational cycling has been popular in India for a decade, so the number of patients presenting with musculoskeletal problems has also increased. There are only a few studies available focusing on finding musculoskeletal problems occurring in recreational cyclists in India. Thus, the objective of this study was to determine the prevalence of musculoskeletal discomforts (MSDs) in recreational cyclists. A cross-sectional survey of 110 recreational cyclists aged 18 years or more, for cycling at least 100 km/month and for 6 months or more from various cycling clubs and the community of Ahmedabad city was performed in this study using convenience sampling. Included subjects were interviewed personally by the team of trained physiotherapists and a questionnaire was filled. A descriptive analysis was conducted. A total of 110 participants (84 males and 26 females) were interviewed for the survey. Their mean cycling duration, frequency, and volume were 41.1 ± 34.6 months, 2.3 ± 1.5 days/week, and 257.2 ± 252.5 km/month respectively. A total of 49.1% of cyclists reported the presence of MSDs, 62.9% reported the presence of pain at one anatomical site, and 37.1% reported pain at more than one site during cycling. The most common anatomical sites for MSD during cycling were knee (21.8%) followed by lower back (13.6%), upper back (9.1%), leg (8.2%), neck (7.3%), elbow (4.5%), and shoulder (3.6%). A total of 32.7% of cyclists reported discomfort persists even after cycling and about 10% reported that the above pain affects their day-to-day activities. study found that MSDs are common in recreational cyclists, with knee and lower back most commonly involved. This data could provide the evidence required to find risk factors responsible for MSDs in cyclists and develop injury prevention and treatment plans for common MSDs seen in recreational cyclists.

Funded Projects by Directorate of Research (DoR)

L J School of Pharmacy

Title: Evaluation of protective effect of Abietic acid in Streptozotocin-induced diabetes and its complications in Sprague Dawley rats

Principal Investigator: Hital Shah
Co-Investigator: Akash Mishra
Approved Funding by DoR: ₹ 61,400

L J School of Pharmacy

Title: Development and evaluation of docetaxel-hesperidin loaded nano formulation for the treatment of breast cancer

Principal Investigator: Dr. Bindu Yadav
Co-Investigator: Zenab Presswala, Raja Dineshbhai
Approved Funding by DoR: ₹ 50,000

L J School of Management

Title: Beyond Basic Needs: Understanding Healthy Food Perception Among Bottom-of-Pyramid Consumers in India

Principal Investigator: Dr. Priya Shah
Co-Investigator: Ms Nidhi Sompura, Dr. Anitha Sunil, Dr. Harleen Mahajan, Dr. Ranjana Dureja
Approved Funding by DoR: ₹ 50,500

Conferences Organised

1 L.J. INSTITUTE OF PHARMACY

The Future of Pharmaceutical Drug Development: Trends, Challenges & Opportunities

Theme of Conference: Pharmaceutical drug development.

Dates: 13th & 14th September, 2024

Total Number of Attendees of the Conference: 270

2 L.J. SCHOOL OF APPLIED SCIENCES

3rd International Conference on Macromolecules, Supramolecular, and Nanotechnology

Theme of Conference: Bring together leading scientists, researchers, students, and technology developers to exchange knowledge and research and innovations in molecular science and nanotechnology.

Dates: 21st & 22nd February, 2025

Total number of Participants: 450+

3 L.J. INSTITUTE OF MANAGEMENT STUDIES

SAMAVAYA – An International Conference on Emerging Trends in Management Practices

Theme of conference: Technology and Management

Dates: 21st & 22nd February, 2025

Total Number of Attendees of the Conference: 208

4 L.J. SCHOOL OF COMPUTER APPLICATIONS

Recent Advances in Engineering and Computer Applications

Theme of Conference: Global connectivity and innovation

Dates: 24th & 25th January, 2025

Total number of Participants: 1000+

5 L.J. INSTITUTE OF PHYSIOTHERAPY & DIRECTORATE OF RESEARCH

International Research Conclave 2025

23rd March, 2025

Theme of Conference: Research, Revolution, Responsibility.

Date: 23rd March, 2025

Total number of Participants: 450+

Inauguration ceremony of the International Conference on 'The Future of Pharmaceutical Drug Development: Trends, Challenges & Opportunities' graced by the presence of Chief Guest Hon'ble Prof. V. K. Kapoor, Hon'ble Vice Chancellor, Hon'ble President of LJK University, along with distinguished dignitaries at L.J. Institute of Pharmacy

Poster presentation at the international conference,
L.J. Institute of Pharmacy

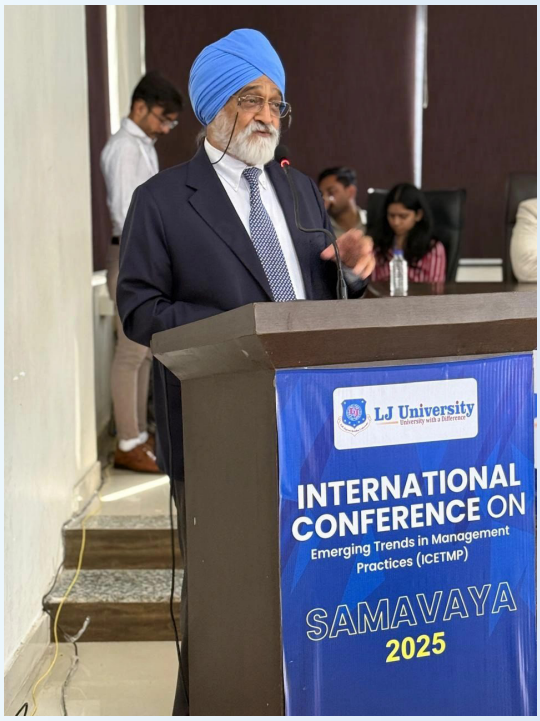
The Future of Pharmaceutical Drug Development:
Trends, Challenges & Opportunities International Conference
(L.J. Institute of Pharmacy)

The auspicious lamp lighting and inauguration ceremony graced by Chief Guest Padma Shri Prof. G. D. Yadav, Prof. Y. K. Agrawal and eminent dignitaries during the International Conference on 'Macromolecules, Supramolecules, and Nanotechnology' at L.J. School of Applied Sciences

Delegates engaged in a conference session at the International Conference at L.J. School of Applied Sciences

Registration desk at the international conference at L.J. School of Applied Sciences

Poster presentation in International Conference on Macromolecules, Supramolecular, and Nanotechnology at School of Applied Sciences



Inaugural speech by Hon'ble Dr. Montek Singh Ahluwalia, Former Deputy Chairman, Planning Commission of India, and Hon'ble Vice Chancellor LJK University at the International conference on 'Emerging Trends in Management Practices' at School of Management Studies

Conference Session in Progress featuring Hon'ble Dr. Montek Singh Ahluwalia, Chief Guest of the International Conference at School of Management Studies

Inauguration of the International Conference on
'Recent Advances in Engineering and Computer Applications' by the Chief guest Dr. Kiran Trivedi, Hon'ble Vice Chancellor, Hon'ble President in the presence of eminent dignitaries at School of Computer Applications

Insightful speech by Chief Guest Dr. Kiran Trivedi during the conference at LJ School of Computer Applications

Training and Capacity Building

1

One Week faculty Development Program (FDP) on Quantitative Research Methodology

Organised by: Directorate of Research & L.J. Institute of Management Studies

Resource Person: Dr. Nilesh Pandya and Dr. Vipul Patel

Dates: 08th July – 13th July, 2024

No. of Participants: 30

2

Panel Discussion on Union Budget 2024-25

Organised by: Directorate of Research

Panellists: Dr. Dinesh Awasthi, Dr. Ketan Shah, Dr. Neha Shah, Mr. Samdeep Kamdar, Dr. Kiran Khatri

Date: 30th July, 2024

No. of Participants: 98

3

Workshop on Identifying and Avoiding Predatory and Cloned Journals

Organised by: Directorate of Research

Resource Person: Prof. (Dr.) Sumit Narula

Dates: 30th September and 2nd October, 2024

No. of Participants: 31

4

PROPEL 2025, Two-day research-focused workshop aimed at enhancing pharmaceutical research skills and knowledge

Organised by: L.J. Institute of Pharmacy

Resource Person: Dr. Rakesh Raval, Dr. Raju Chaudhari, Dr. Hardik Bhatt, Dr. Sanjeev Acharya, Dr. Komal Shah, Dr. Bhumika Patel, Mr. Chintan Marasiya

Dates: 7th & 8th February, 2025

No. of Participants: 120

5

GIBioN, 35th State level Inter college competition - 2025

Organised by: L.J. School of Applied Sciences

Theme of Event: Various scientific sessions showcased cutting-edge research, competitions, including Bio Quiz, Extempore, Presentations, Scientoon, and Article Writing.

Date: 9th February, 2025

No. of Participants: 588

6

Expert talk on Computational design and optimization of Nargenecin derivatives as DNAE1 inhibitor

Organised by: L.J. School of Applied Sciences and Directorate of Research (DoR)

Resource Person: Dr. Dweipayan Goswami

Date: 11th April, 2025

No. of Participants: 104

FDP hands-on session in the computer laboratory at the School of Management Studies

Faculty participants from the School of Management Studies in the One-Week FDP

Guest Felicitation during PROPEL 2025 at L.J. Institute of Pharmacy

Welcome address at Expert Talk Session at
LJ School of Applied Sciences

Expert Talk session in progress

Q&A session during the Expert Talk at L.J. School of Applied Sciences

Prize distribution ceremony during GIBioN Event

Faculty members from the School of Applied Sciences actively participated in the GIBioN Event

PEOPLE & PROGRAM

Distinguished Researchers

Dr. Shreeraj Shah
L J School of Pharmacy
Publications: 10
Research Honorarium: ₹ 11000

Dr. Hardik Joshi
LJ School of Engineering and Technology
Publications: 9
Research Honorarium: ₹ 11000

Dr. Kaushika Patel
L J School of Pharmacy
Publications: 5
Research Honorarium: ₹ 11000

Dr. Paresh Patel
L J School of Pharmacy
Publications: 5
Research Honorarium: ₹ 11000

Mr. Mohammed Azim Shaikh
L J Polytechnic
Publications: 4
Research Honorarium: ₹ 5000

Dr. Dipa Israni
L J School of Pharmacy
Publications: 4
Research Honorarium: ₹ 5000

Dr. Priya Shah
Directorate of Research
Publications: 3
Research Honorarium: ₹ 5000

Dr. Dilip Maheshwari
L J School of Pharmacy
Publications: 3
Research Honorarium: ₹ 5000

Ms. Disha Joshi
L J School of Pharmacy
Publications: 3
Research Honorarium: ₹ 5000

Dr. Sweety Shah
L J School of Management Studies
Publications: 3
Research Honorarium: ₹ 5000

Dr. Tosha Pandya
L J School of Pharmacy
Publications: 3
Research Honorarium: ₹ 5000

Dr. Bindu Kumari Yadav
L J School of Pharmacy
Publications: 3
Research Honorarium: ₹ 5000

Dr. Priya Shah
L J School of Pharmacy
Publications: 3
Research Honorarium: ₹ 5000

Dr. Mansi Shah
L J School of Pharmacy
Publications: 3
Research Honorarium: ₹ 5000

Dr. Nirav Pandya
L J School of Applied Sciences
Publications: 3
Research Honorarium: ₹ 5000

Special Recognition: Central Government Grant (ICSSR) Funded Research Award

Dr. Neha Mehta, Dr. Siddarth Singh Bist, Dr. Sweety Shah, Dr. Rajanibala Shah & Dr. Ranjana Dureja

LJ School of Management Studies

Ph.D. Programme at LJK University

Hirakani Zeel Maunik

Branch: Applied Science
Current position: Lab assistant (LJ School of Applied Sciences)
Topic: Study of biological activities of bioactive compounds derived from medicinal plants associated bacterial endophytes.
Guide: Dr. Viral Shukla

Anisha Gandhi

Branch: Management
Current position: Lecturer (LJ School of Diploma Engineering)
Topic: Best Communication Practices for Engaging Postgraduate Students: A Study of Ahmedabad Colleges.
Guide: Dr. Himani Sheth

Amee Bhatt

Branch: Management
Current Position: Assistant Professor (LJ School of Management Studies)
Topic: Navigating Shadow Banking in India: Non - Performing Assets (Npas) Analysis on Non-Banking Financial Companies (Nbfcs) in India.
Guide: Dr. Sweety Shah

Tirth Shah

Branch: Pharmacy
Current position: Sr. Officer (Intas Pharmaceutical Ltd.)
Topic: Method development & validation.
Guide: Dr. Dilip Maheshwari

Sukrit Biswas

Branch: Applied Science
Current position: Manager (Acuprecc research Pvt. ltd.)
Topic: Characterization and Interaction Study of Bio Nanocomposite.
Guide: Dr. Nirav Pandya

Drashti Thakkar

Branch: Management
Current position: Coordinator for Grades 11th and 12th (CBSE) (Gujarat Public School, Vadodara)
Topic: Ethical Advertising in Cosmetics and Cultivating Consumer Trust.
Guide: Dr. Neha Mehta

Sunil Gupta

Branch: Philosophy and Theology
Current position: Senior Executive (Azim Premji University)
Topic: The Co-existential Relationship of Humans with Environmental Ecology in light of Madhyasth Darshan Sah- astitva-vad.
Guide: Dr. Surendra Pathak

Upadhyay Dharmik Jayeshkumar

Branch: Engineering
Current position: Lecturer (Apollo Institute of Engineering and Technology)
Topic: Mathematical Modelling of Biological System Darshan Sah-astitva-vad.
Guide: Dr. Hardik Joshi

Ravikant Gautami

Branch: Philosophy and Theology
Current position: Dy. Director
(Department of agriculture, Govt. of Maharashtra)
Topic: Study of interrelated Universal Ethical Principles of Production, Consumption and Utility for "Prosperity for all" in the light of Madhyasth Darshan Sah Astitvvaad (Nagraaj).
Guide: Dr. Surendra Pathak

Surender Jaglan

Branch: Philosophy and Theology
Current position: Academic Retainer (Punjab State Education Board)
Topic: Impact of Madhyasth Darshan Sah-astitvvaad Philosophy on professional well-being, behavioral patterns, and family dynamics among teachers.
Guide: Dr. Surendra Pathak

Drishti Jalan

Branch: Management
Current position: Lecturer (New LJ Commerce College)
Topic: A study on the impact on stress and burnout on employees performance with special reference to event planning industry in Gujarat.
Guide: Dr. Ranjana Dureja

Team Directorate of Research

Dr. Priya Shah, Deputy Director
Directorate of Research, LJK University

Dr. Sweety Shah
Associate Professor and Research Coordinator
LJ School of Management Studies

Dr. Jalpa Parikh
Associate Professor and Research Coordinator
LJ School of Physiotherapy

Dr. Anita Sharma
Assistant Professor and Research Coordinator
LJ School of Applied Science

Ms. Meghana Vaishnav
Research Coordinator
School of Planning
Directorate of Research

Ishwar Prajapati
Librarian
LJ Institute of Engineering and Technology

Mr. Kanu Bhai
Caretaker, Directorate of Research