



RESEARCH CENTRE NEWS

On 2nd August 2024, Dr. Yogesh Bharat Dalvi, a scientist from the Pushpagiri Research Centre, served as a distinguished resource person at the "International Colloquium on Biochemical Engineering." This prestigious event was organized by the Postgraduate & Research Department of Botany at Catholicate College, Pathanamthitta, Kerala, India. The colloquium was sponsored by the Botany Alumni Association in collaboration with the Kerala Academy of Science and Mahatma Gandhi University, Kottayam.

During the event, Dr. Dalvi delivered an enlightening talk on "Biomimetic Scaffolds and Hydrogels for Next Generation." His presentation explored the cutting-edge advancements in the field of biomaterials, particularly focusing on the development of scaffolds and hydrogels that mimic the natural extracellular matrix. These innovations hold immense potential for regenerative medicine, offering new avenues for tissue engineering and repair.

The colloquium was attended by a diverse audience, including researchers, academicians, and students, who greatly benefited from Dr. Dalvi's expertise and insights. His talk not only highlighted the recent advancements in biomimetic materials but also emphasized the role of interdisciplinary collaboration in driving innovation in biochemical engineering.

Pushpagiri Research Centre (PRC) takes great pride in participating in such international academic events, which serve as platforms for knowledge exchange and collaboration. By engaging in these initiatives, PRC continues to contribute to the global scientific community and enhance its reputation as a center of excellence in research and innovation.

We are proud of Dr. Dalvi's achievements and his ongoing efforts to advance the field of biochemical engineering. His contributions reflect the core values of Pushpagiri Research Centre in promoting intellectual growth and scientific discovery.

"International Colloquium on Biochemical Engineering."



POSTGRADUATE & RESEARCH DEPARTMENT OF BOTANY
CATHOLICATE COLLEGE, PATHANAMTHITTA
(NAAC Re-accredited A++ Grade with CGPA 3.53)

International Colloquium on Biochemical Engineering

August
02nd 2024
Mar Clemis Hall
Catholicate College
Pathanamthitta

Sponsored by Botany Alumni Association

Call for Posters

Size 90cm (width) x 120cm (Vertical) in portrait, printed in photopaper/ glossy paper/ cloth (Posters printed on flex are not allowed)
Last date for registration & abstract submissions extended 28th July 2024
mail your abstracts to dob1955@gmail.com

THRUST AREAS

Diversity & Life Forms | Biotechnology | Molecular Biology | Genetic Engineering
Cancer Biology | Biochemistry | Chemotaxonomy | Phytomodulation
Bioinformatics | Drug Design | Molecular Medicine | Phytochemistry
Chemical Ecology, etc.

Dr. Sindu Jones (Principal)

Dr. Mathew Dan (Vice President
Alumni Association)

Prof. (Dr.) Binoy T Thomas (I&D)

Prof. (Dr.) G. M. Nair (President
Kerala Academy of Sciences)
Dr. Gokul G Nair (Coordinator)
9645544975

Committee Members:

Dr. Deepthi A.S. | Dr. Nisha Joseph | Tinu Thomas | Hema K.S. | Dr. Thomas V.P. | Gopika Gopan



Prof. (Dr.) GM Nair
President
Kerala Academy of
Sciences



Dr. Hareesh Nair
Sr. Dr. Biology
University of Texas
San Antonio



Dr. Yogesh Bharat Dalvi
Pushpagiri Institute of
Medical Sciences
Dr. Rajeev Rajan
Government
Engineering College
Barton Hill, Trivandrum



St Berchmans College
 AUTONOMOUS
 Changanassery, Kerala, India - 686101. † Affiliated to Holy Cross University, Kottayam

DEPARTMENT OF BIOTECHNOLOGY

Association Inauguration 2024

CHIEF GUEST
Dr. Yogesh Bharat Dalvi
 Scientist, Pushpagiri Research Centre

TALK ON:
 "Engineering the Future : Bio-mimetic Scaffolds and Hydrogels for Tissue Regeneration"

Friday, August 16, 2024
09:30 AM
Kallarackal Hall

Rev. Fr. Reji P Kurian, Principal
 Tessmal P George - Head of the Department
 Rositta Varghese - President, Biotechnology Association
 Anagha Sathesh - Secretary, Biotechnology Association

On 16th August 2024, Dr. Yogesh Bharat Dalvi, a distinguished scientist from the Pushpagiri Research Centre, had the honor of inaugurating the "Biotechnology Association" at SB College, Changanacherry, Kerala. As part of the inauguration, Dr. Dalvi delivered an insightful invited lecture on the topic "Engineering the Future: Tissue Engineering."

Dr. Dalvi's lecture primarily addressed MSc and BSc students, providing them with a comprehensive overview of the advancements in tissue engineering and its potential to shape the future of medicine. The session was well-received, fostering an engaging dialogue between Dr. Dalvi and the students. Additionally, Dr. Dalvi had the opportunity to interact with the faculty members of the Biotechnology Department, including the Head of the Department, the Dean of Research, and the Vice Principal.

These interactions not only provided valuable insights into current research trends but also helped in building strong academic ties between Pushpagiri Research Centre and SB College.

Pushpagiri Research Centre (PRC) takes immense pride in participating in such research-oriented activities that contribute to the intellectual growth of students and bring academic recognition to Pushpagiri. By engaging in initiatives like these, PRC continues to uphold its commitment to excellence in research and education, fostering a culture of innovation and collaboration.

PRC look forward to more such opportunities to share knowledge, inspire young minds, and enhance the reputation of Pushpagiri in the academic community.

Pushpagiri Research Centre remains dedicated to advancing research and promoting intellectual excellence across disciplines.

Newly formed Research Council

Constitution of Research Council - Pushpagiri Medical Society.

A Research Council has been constituted to provide strategic oversight, coordination and support for research activities within our Institutions. Representatives from all Institutions under Pushpagiri Medical Society will serve as members in this Council.

Council Members:

1. Rev. Dr Mathew Mazhavancheril, Research Director
2. Dr Vikram Gowda, VP(Administration), PIMS
3. Dr Tomy Philip, Professor of General Medicine, PIMS
4. Dr Jacob Abraham, VP (PG Studies),
5. Dr.Aby Mathews, Principal, PCDS
6. Dr Sunil S, VP (Academics), PCDS
7. Dr. Nebu George Thomas, Professor of Periodontology, PCDS
8. Dr Santosh Mathews, Principal, PCP
9. Dr Christy K Jose, Professor & Head, Dept. of Pharmaceutical Chemistry, PCP
10. Dr Jeenu Joseph, Professor & Head, Dept. of Pharmacognosy, PCP
11. Rev Sr. Mary Jyothi OSS, VP (Administration), PCON
12. Mrs. Ashamol MB, Lecturer, PCON
13. Mrs. Ansu Raju, Asst. Professor, PCON
14. Dr Yogesh B Dalvi, Scientist, PRC
15. Dr Aniket Naha, Scientist, PRC



MoU with KPR Institute



Pushpagiri Research Centre signed an MoU with KPR institute of Engineering and Technology on 29 th August at 9am. KPR is an Autonomous institution at Coimbatore.

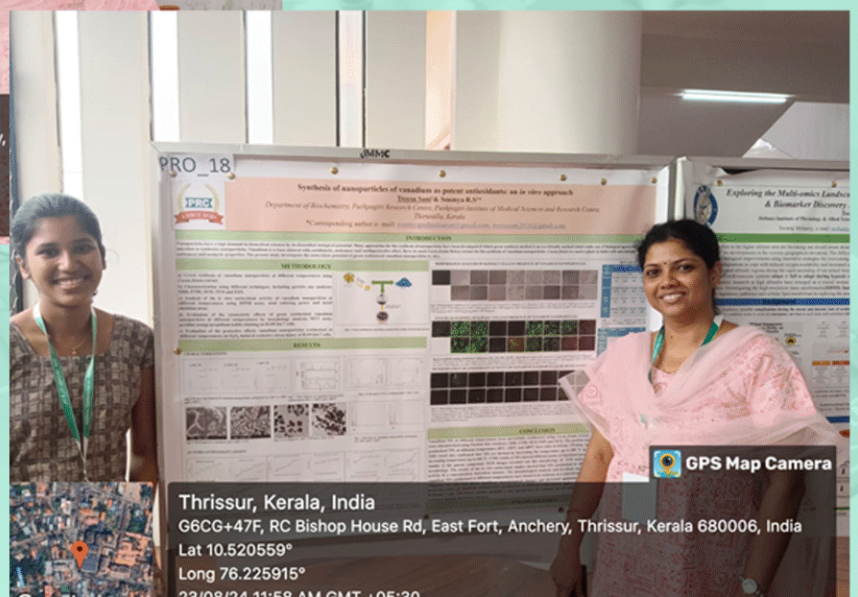
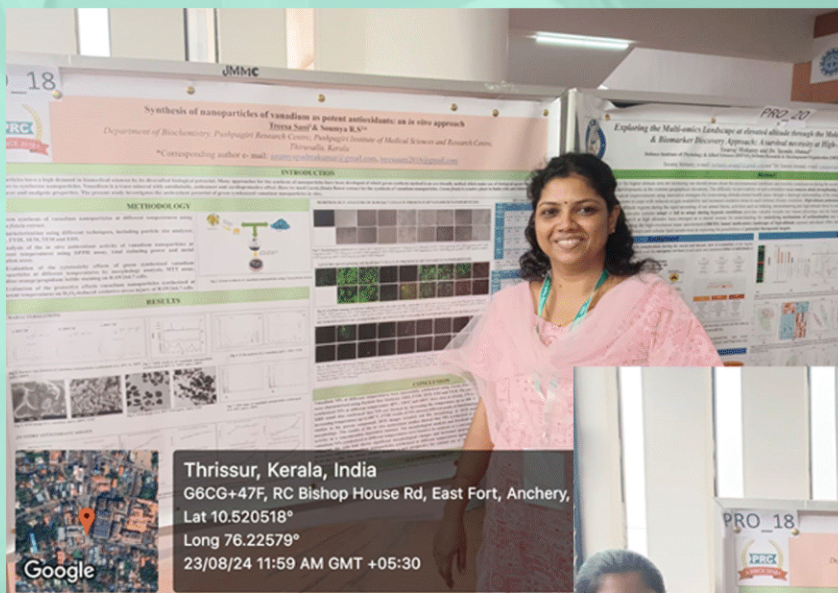
This collaboration aims to develop nanotechnology based tissue engineering scaffolds.



PRC got Publications in high Impact Journals as the part of association between International and Inter University centre for nanosciences, MG University and KPR institute of Engineering and Technology.

POSTER PRESENTATION

Miss. S. Treesa , Research Trainee of Dr Soumya R.S. (Scientist of Pushpagiri Research Centre Department of Biochemistry) presented a poster titled “ **SYNTHESIS OF VANADIUM NANOPARTICLES OF VANADIUM AS POTENT ANTIOXIDANTS: AN INVITRO APPROACH**” in the National Conference on OMICS in redefining health care Organized by Jubilee center for Medical research on the 23rd and 24 th August 2024. It was selected for best poster award. National Conference on OMICS provided an excellent platform to share our research with experts and peers in the field. The conference facilitated fruitful discussions that will help us to guide the future direction of our research.



CONGRATULATIONS

CIFT has sanctioned another project by keeping Dr Nebu George Thomas and Dr Yogesh Bharat Dalvi as a coPI.



ICAR - CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY

भारतीय कृषि अनुसंधान परिषद - केन्द्रीय मात्स्यिकी प्रौद्योगिकी संस्थान

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DIVISIONS -

TECHNOLOGIES

RESEARCH CENTRES -

PROJECTS -

SERVICES -

FACILITIES -

PUBLICATIONS

TENDERS

SITEM

28.	Process development and scaling up of production of different molecular weight chitosan with different degree of de-acetylation and evaluation of their applications	Dr. Elavarasan K.
29.	Assessment of fish harvest and post harvest technological aspects and mitigation measures for problems with special reference to Maharashtra	Dr. Asha K. K.
30.	A study on the entrepreneurship ecosystem in fisheries and the cybernetics of Women Initiated Enterprises in Fisheries (WIEF) in selected coastal states of India	Dr. Ashaleta S.
31.	Development and validation of biomedical and cosmetic products from secondary fishery raw materials	Dr. Binsi P. K.
32.	Ensuring safety of fish and fishery products: Framework for validating Regulatory specifications	Dr. Parikaj Kishore
33.	Engineering interventions in post-harvest sector	Dr. Murali S.

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

RESEARCH PROJECT PROFORMA FOR INITIATION OF A RESEARCH PROJECT (RPP - I)

1. **Institute Project Code** (to be provided by PME Cell)

2. **Project Title:** ViValWaste: Repurposing fish processing residues for tapping vital value

3. **Key Words:** biomedical, nutraceutical, dietary solutions, data mining

4. (a) **Name of the Lead Institute:** Central Institute of Fisheries Technology (ICAR).

(b) **Name of Division/ Regional Centre/ Section:** Fish Processing Division

5. (a) **Name of the Collaborating Institute(s), if any :** Pushpagiri Institute of Medical Sciences and Research centre, Thiruvalla

Scientists involved

1. Dr Nebu George Thomas,
Professor,
Department of Periodontics,
Pushpagiri College of Dental Sciences
Thiruvalla, Pathanamthitta, Kerala

2. DR. YOGESH B. DALVI
Scientist & Research Coordinator,
Molecular Biology & Phytochemicals Research Lab. Pushpagiri Research Centre,
Pushpagiri Institute of Medical Sciences,
Thiruvalla, Pathanamthitta, Kerala

3. (b) **Name of Division/ Regional Center/ Section of Collaborating Institute(s):** Veraval RC of CIFT, QAM Division, MFB Division, FT Division, EIS Division

Project Team (Name(s) and designation of PI, CC-PI and all project Co-PIs, with time proposed to be spent)

S. No.	Name, designation and Institute	Status in the project (PI/CC-PI/Co-PI)	Time to be spent (%)	Work components to be assigned to individual scientist
1.	Dr.Binsi P.K, Scientist, FP Division, CIFT	PI	40	• Development of 3D printed matrices and bioinks for biomedical applications

Research Paper Publication



Pharmacological Research - Natural Products

Volume 4, September 2024, 100076



Microencapsulated sardine Oil using vanillic acid grafted chitosan as wall material: Alleviating effect on streptozotocin-induced hyperglycemia in rats

Vishnu Kalladathvalappil Venugopalan ^{a,b} , Ajeeshkumar Kizhakkeppurath Kumaran ^b, Ruby Varghese ^{c,d}, Yogesh Bharat Dalvi ^c, Sootawat Benjakul ^e, Suseela Mathew ^b, Ammanamveetil Abdulla Mohamed Hatha ^a, Niladri Sekhar Chatterjee ^b

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<https://doi.org/10.1016/j.prenap.2024.100076>

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Highlights

- The spray-drying process of microencapsulating sardine oil was performed.
- Chitosan with phenolic acid was used as wall material of microcapsules.
- Microencapsulation increased prevented oxidation of omega-3 fatty acids.
- At 500 mg/kg, sardine oil-loaded microcapsules (SO-MC) significantly lower blood glucose levels in diabetic rats.
- Oxidative stress through increasing glutathione S-transferase (GSH) and glutathione peroxidase (GPx) synthesis was reduced.

Functional regulation of hydroxyproline, ascorbic acid and lipid peroxidation during GABA chitosan nanoparticles mediated liver regeneration

Cite

Article type: Research Article

Authors: Shilpa, J.^{a,*} | Nebu, G.T.^b

Affiliations: [a] Department of Biotechnology, Sethu Institute of Technology, Virudhunagar, Tamil Nadu, India | [b] Pushpagiri College of Dental Sciences, Tiruvalla, India

Correspondence: [*] Corresponding author: Dr. Shilpa Joy, Associate Professor, Department of Biotechnology, Sethu Institute of Technology, Virudhunagar, Tamil Nadu, India – 626115. Tel.: +91 9048352365; E-mail: shilpajoy09@gmail.com.

Abstract: BACKGROUND: Liver is a vital organ and the role of Gamma aminobutyric acid (GABA) conjugated chitosan nanoparticles in enhancing the hepatocyte proliferation was reported. To understand the influence of these nanoparticles on various biochemical parameters during enhanced liver regeneration will improve its clinical significance. OBJECTIVE: To highlight the influence of GABA chitosan nanoparticles on ascorbic acid, hydroxyproline and lipid peroxidation levels during liver regeneration. METHODS: Intraperitoneal administration of nanoparticles was done to partially hepatectomized female Sprague Dawley rats (GCNP) and compared the biochemical parameters with sham operated control (C) and with no treatment (PHNT) cases. RESULTS: The hydroxyproline content was increased in the liver of GCNP when compared to PHNT ($P < 0.05$). The lipid peroxidation level was increased ($P < 0.01$) in PHNT compared to the control whereas, decreased in GCNP when compared ($P < 0.01$) with PHNT. There was a significant increase ($P < 0.01$) in the ascorbic acid content in PHNT when compared with C. It was significantly decreased ($P < 0.01$) in GCNP when compared with PHNT. CONCLUSION: This highlighted the therapeutic implications of lipid peroxidation, hydroxyproline and ascorbic acid in GABA chitosan nanoparticles mediated liver regeneration, which will have immense clinical relevance in maintaining liver health.

Keywords: Gamma amino butyric acid, lipid peroxidation, ascorbic acid, hydroxyproline, liver regeneration

DOI: 10.3233/JCB-230129

Journal: Journal of Cellular Biotechnology, vol. 10, no. 1, pp. 75-84, 2024

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Price: EUR 27.50 

Original Research

Domestic Chicken Eggshell-Derived Bone Substitute: Synthesis, Characterization and *In Vitro* Cell Viability

Sruthy Prathap¹, Rajesh K. S.², Nebu G. Thomas³, Jeyachandran Venkateshan⁴, Prathap M. S.⁵, Suprith Surya⁶

¹Department of Periodontology, Yenepoya Dental College, Mangalore, Karnataka, India, ²Department of Periodontology, Yenepoya Dental College, Yenepoya University, Mangalore, Karnataka, India, ³Department of Periodontology, Pushpagiri College of Dental Sciences, Pushpagiri Institute of Medical Sciences and Research Centre, Thiruvalla, Kerala, India, ⁴Yenepoya Research Centre, Yenepoya University, Mangalore, Karnataka, India, ⁵Department of Conservative Dentistry and Endodontics, Yenepoya Dental College, Yenepoya University, Mangalore, Karnataka, India, ⁶Consultant Veterinary Surgeon and

ABSTRACT

Background: Hydroxyapatite (HA) is a material with excellent bioactivity and chemical similarity to bone. It can be extracted from natural sources or fabricated synthetic sources. **Objective:** To synthesize HA from domestic chicken eggshells and to characterize it using Fourier transform infrared (FTIR), X-ray powder diffraction (XRD), scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy, and cell viability. **Materials and Methods:** Domestic chicken eggshells (Indian breed "Aseel") were used to synthesize HA through the chemical precipitation method. The processing was conducted at an elevated temperature (900°C). Characterization of the sample was performed using FTIR, SEM, EDS, and XRD. The cell viability was tested *in vitro* using methyl thiazolyl tetrazolium assay. **Results:** Phosphate and calcium ions were confirmed by FTIR and EDS. The carbonate peaks observed were typical of biological apatite. XRD revealed its crystalline property. SEM analysis confirmed the particle size to be less than 100 µm and the presence of a porous structure. The material was found to be noncytotoxic and favored cell growth. **Conclusion:** The synthesized HA showed a crystalline nature and had good cell viability. Hence, it may be considered as a material for various biomedical applications.

Systematic Review

The Effectiveness of Curcumin Nanoparticle-Coated Titanium Surfaces in Osteogenesis: A Systematic Review

Nandita Suresh ^{1,2}, Matti Mauramo ³, Tuomas Waltimo ^{1,4}, Timo Sorsa ^{1,5} and Sukumaran Anil ^{6,7,*}

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 - ⁶ Oral Health Institute, Hamad Medical Corporation, Doha P.O. Box 3050, Qatar
 - ⁷ College of Dental Medicine, Qatar University, Doha P.O. Box 2713, Qatar
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Abstract: (1) Background: This systematic review critically appraises and synthesizes evidence from in vitro studies investigating the effects of curcumin nanoparticles on titanium surface modification, focusing on cell adhesion, proliferation, osteogenic differentiation, and mineralization. (2) Methods: A comprehensive electronic search was conducted in PubMed, Cochrane Central Register of

Publication

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"Visualization matters" – stereoscopic visualization of 3D graphic neuroanatomic models through *AnaVu* enhances basic recall and radiologic anatomy learning when compared with monoscopy

[Doris George Yohannan](#) , [Aswathy Maria Oommen](#), [Amruth S. Kumar](#), [S. Devanand](#), [Minha Resivi UT](#), [Navya Sajjan](#), [Neha Elizabeth Thomas](#), [Nasreen Anzer](#), [Nithin Kadakampallil Raju](#), [Bejoy Thomas](#), [Jayadevan Enakshy Rajan](#), [Umesan Kannanvilakom Govindapillai](#), [Pawan Harish](#), [Tirur Raman Kapilamoorthy](#), [Chandrasekharan Kesavadas](#) & [Jayanthi Sivaswamy](#)

[BMC Medical Education](#) **24**, Article number: 932 (2024) | [Cite this article](#)

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Abstract

Background

The authors had previously developed *AnaVu*, a low-resource 3D visualization tool for stereoscopic/monoscopic projection of 3D models generated from pre-segmented MRI neuroimaging data. However, its utility in neuroanatomical education compared to conventional methods (specifically whether the stereoscopic or monoscopic mode is more effective) is still unclear.

Methods

A three-limb randomized controlled trial was designed. A sample ($n = 152$) from the 2022 cohort of MBBS students at Government Medical College, Thiruvananthapuram (GMCT), was randomly selected from those who gave informed consent. After a one-hour introductory lecture on brainstem anatomy and a dissection session, students were randomized to three groups (S – Stereo; M – Mono and C – Control). S was given a 20-min demonstration on the brainstem lesson module in *AnaVu* in stereoscopic mode. M was given the same demonstration, but in monoscopic mode. The C group was taught using white-board drawn diagrams. Pre-intervention and post-intervention tests for four domains (basic recall, analytical, radiological anatomy and diagram-based questions) were conducted before and after the intervention. Cognitive loads were measured using a pre-validated tool. The groups were then swapped –S→ M, M →S and C→S, and they were asked to compare the modes.

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