DBT-BIRAC RESEARCH PROJECT FOR DR. NEBU GEORGE THOMAS

Received a research grant of ₹1.248 crore from the Department of Biotechnology (DBT), Government of India, under the DBT-BIRAC programme, for the project titled "Extraction of Nanocellulose and Carrageenan from Seaweeds and Preparation of Polymer Nanocomposites for Tissue Engineering and Diabetic Wound Healing." The two-year project (2026–2028) is a collaborative research initiative between CHRIST University, Bengaluru, and the Indian Institute of Technology Jammu, with Dr. Nebu George Thomas, Pushpagiri Institute of Medical Sciences and Research Centre, serving as one of the Principal Investigators. The project aims to develop seaweed-derived nanocellulose- and carrageenan-based polymer nanocomposites for applications in tissue engineering and diabetic wound healing.

BT/PR64776/MRNAR/169/30/2026
भारत सरकार/ Government of India
विज्ञान और प्रौद्योगिकी मंत्रालय/ Ministry of Science & Technology
जैव प्रौद्योगिकी विभाग/ Department of Biotechnology

Block 2, 6-8th Floors
CGO Complex, Lodhi Road,
New Delhi- 110 003

Dated: 3.9.2026

Administrative Order

Sanction of the President is hereby conveyed, under Rule 16 of the Delegation of Financial Powers Rules, 2024, for the implementation of the project entitled " **Extraction of Nanocellulose and Carrageenan from Seaweeds and preparation of polymer nanocomposites for tissue engineering and diabetic wound healing**" for a period of 2 Year 0 Month at a total cost of **Rs.12483050 (Rupees One Crore Twenty Four Lakhs Eighty Three Thousand and Fifty Only)** on the terms and conditions detailed here under:-

2 **The Project :**

2.1 Title : **Extraction of Nanocellulose and Carrageenan from Seaweeds and preparation of polymer nanocomposites for tissue engineering and diabetic wound healing**

2.2 Details of the Investigators:

Project Coordinator

Prof. Manoj B
Professor, Department of Physics and Electronics, Christ University,
Bangalore, Karnataka- 560029

Principal Investigator:

1. **Prof. Manoj B**
Department of Physics and Electronics, Christ University,
Bangalore, Karnataka- 560029

2. **Dr. Rajkumar Velu**
Assistant Professor
Department of Mechanical Engineering
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NH-44 , PO Nagrota, Jagti, Jammu and Kashmir 181221, (UT)

3. **Prof. Nebu George Thomas**
Department of Periodontology
Pushpagiri Institute Of Medical Sciences and Research Centre
, Pathanamthitta, Thiruvalla Kerala- 689101

കടൽപായലുകളിൽനിന്ന് പ്രമേഹവ്രണ മരുന്ന്; നാനോ ഗവേഷണത്തിനു കേന്ദ്രസഹായം



കടൽ പായൽ

വർഗീസ് സി. തോമസ്

പത്തനംതിട്ട ● പ്രമേഹവ്രണങ്ങൾ ഉണക്കാനുള്ള നൂതന നാനോ മെറ്റീരിയലുകൾ കടൽപായലുകളിൽനിന്നു വികസിപ്പിക്കാൻ 1.25 കോടിയുടെ കേന്ദ്ര ജൈവ സാങ്കേതിക വകുപ്പിന്റെ അനുമതി.

ഡോ. ബി.മനോജ് (ക്രൈസ്റ്റ് യൂണിവേഴ്സിറ്റി) നേതൃത്വം നൽകുന്ന ഗവേഷണത്തിന് എംജി സർവകലാശാലാ മുൻ വിസി ഡോ. സാബു തോമസ്, ഡോ. രാജ്കുമാർ വേലു (ഐഐടി ജമ്മു), സ്റ്റെം സെൽ ടിഷ്യു എൻജിനീയറിങ് വിദഗ്ധൻ ഡോ. നെബു ജോർജ് തോമസ്, (പുഷ്പഗിരി) ഡോ. എ.എൻ.അമ്പാടി, ഡോ. മാർട്ടിൻ ജോർജ് തോമസ്, ഡോ. ജെഫിൻ കെ.ജോസ്, ഡോ. ശിർഷ ബോസ് തുടങ്ങിയവരാണു പങ്കാളികൾ.

2 വർഷമാണു കാലാവധി. പച്ച, ചുവപ്പ് കടൽപായലുകളിൽ നിന്നു സെല്ലുലോസ്, കാരജീനൻ എന്നീ ജൈവപോളിമറുകൾ വേർതിരിച്ച് യാന്ത്രിക-രാസ പ്രക്രിയകളിലൂടെ നാനോസെല്ലുലോസ് ഉൽപാദിപ്പിക്കുന്നതാണ് ആദ്യഘട്ടം. 3 ഡി പ്രിന്റിങ്, ഇലക്ട്രോ സ്പിന്നിങ് തുടങ്ങിയ സാങ്കേതിക വിദ്യകൾ വഴി ഈ നാനോസെല്ലുലോസും കാരജീനനും ഉപയോഗിച്ച് ടിഷ്യു എൻജിനീയറിങ് ഘടനകൾ നിർമിക്കും. ഈ ഘടനകളുടെ വ്രണങ്ങൾ ഉണക്കാനുള്ള ശേഷിയും വിലയിരുത്തി രോഗികളിൽ ഉപയോഗിക്കാനാവും എന്ന് ഗവേഷകർ പറയുന്നു.

കരിയാത്ത പ്രമേഹവ്രണ പ്രശ്നങ്ങൾക്ക് ഇതൊരു ശ്രദ്ധേയമായ പരിഹാരമായി മാറും എന്നാണു പ്രതീക്ഷ.



പ്രമേഹവ്രണങ്ങൾ ഉണക്കാനുള്ള നാനോ മെറ്റീരിയലുകൾ വികസിപ്പിക്കാൻ 1.25 കോടിയുടെ കേന്ദ്ര ഫണ്ട്

തിരുവല്ല പുഷ്പഗിരി റിസേർച്ച് സെന്റർ, ബംഗളൂരു ക്രൈസ്റ്റ് യൂണിവേഴ്സിറ്റി, ജമ്മു ഇന്ത്യൻ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് ടെക്നോളജി എന്നിവയുടെ സംയുക്ത സഹകരണത്തോടെയാണ് പദ്ധതി നടപ്പിലാക്കുന്നത്

തിരുവല്ല: കടൽപ്പായലുകളിൽ നിന്ന് നാനോസെല്ലുലോസും കാരജീനനും വേർതിരിച്ചെടുത്ത് പ്രമേഹവ്രണങ്ങൾ ഫലപ്രദമായി ഉണക്കുന്നതിനും ടിഷ്യു എൻജിനിയറിംഗിനുമുള്ള പോളിമർ നാനോ കമ്പോസിറ്റുകൾ വികസിപ്പിക്കുന്നതിനുള്ള ഗവേഷണ പദ്ധതിക്ക് കേന്ദ്ര സർക്കാരിന്റെ ബയോടെക്നോളജി വകുപ്പിന്റെ അംഗീകാരം ലഭിച്ചു. 1,24,83,050 രൂപയാണ് ഈ പദ്ധതിക്കായി അനുവദിച്ചിരിക്കുന്നത്.

തിരുവല്ല പുഷ്പഗിരി റിസർച്ച് സെന്റർ, ബംഗളൂരു ക്രൈസ്റ്റ് യൂണിവേഴ്സിറ്റി, ജമ്മു ഇന്ത്യൻ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് ടെക്നോളജി എന്നിവയുടെ സംയുക്ത സഹകരണത്തോടെയാണ് പദ്ധതി നടപ്പിലാക്കുന്നത്. രണ്ടു വർഷം നീണ്ടുനിൽക്കുന്നതാണ് ഗവേഷണ പദ്ധതി. പച്ച, ചുവപ്പ് കടൽപ്പായലുകളിൽ നിന്ന് സെല്ലുലോസ്, കാരജീനൻ എന്നീ ജൈവപോളിമറുകൾ വേർതിരിച്ചെടുക്കുകയും, വേർതിരിച്ചെടുത്ത സെല്ലുലോസ് ഉപയോഗിച്ച് ഒറ്റിമൈസ് ചെയ്ത യാന്ത്രിക-രാസപ്രക്രിയകളിലൂടെ നാനോസെല്ലുലോസ് ഉത്പാദിപ്പിക്കുകയും ചെയ്യുന്നു.

തുടർന്ന് ഗ്രോത്ത് ഫാക്ടറുകൾ, ആന്റിമൈക്രോബയൽ ഏജന്റുകൾ, ആന്റിഓക്സിഡന്റുകൾ എന്നിവ ചേർത്ത് നാനോസെല്ലുലോസിനെ പ്രവർത്തനക്ഷമമാക്കുകയും, 3ഡി പ്രിന്റിംഗ്, ഇലക്ട്രോ സ്പിന്നിംഗ് തുടങ്ങിയ സാങ്കേതിക വിദ്യകൾവഴി ഈ നാനോസെല്ലുലോസും കാരജീനനും ഉപയോഗിച്ച് ടിഷ്യു എൻജിനിയറിംഗ് സ്കാഫോൾഡുകൾ നിർമിക്കുകയും ചെയ്യുന്നു. ഈ സ്കാഫോൾഡുകളുടെ രാസ-ഭൗതിക, രൂപശാസ്ത്ര, യാന്ത്രിക സവിശേഷതകൾ വിവിധ വിശകലന സാങ്കേതികവിദ്യകളിലൂടെ പരിശോധിക്കുകയും, വിട്രോ, വിവൊ പഠനങ്ങളിലൂടെയും ഹിസ്റ്റോളജിക്കൽ വിശകലനങ്ങളിലൂടെയും കോശങ്ങളുടെ അനുയോജ്യതയും വ്രണങ്ങൾ ഉണക്കാനുള്ള ശേഷിയും വിലയിരുത്തുകയുമാണ് പദ്ധതിയുടെ പ്രധാന ലക്ഷ്യങ്ങൾ.

ക്രൈസ്റ്റ് യൂണിവേഴ്സിറ്റിയിലെ ഫിസിക്സ് ആൻഡ് ഇലക്ട്രോണിക്സ് വകുപ്പിലെ പ്രഫസർ മനോജ ബി നേതൃത്വം നൽകുന്ന ബൃഹത്തായ ഗവേഷണ പദ്ധതിയിൽ ജമ്മു ഇന്ത്യൻ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് ടെക്നോളജിയിലെ മെക്കാനിക്കൽ എൻജിനിയറിംഗ് വകുപ്പ് അസിസ്റ്റന്റ് പ്രഫസർ ഡോ. രാജ്കുമാർ വേലു, പുഷ്പഗിരി റിസർച്ച് സെന്ററിലെ സ്റ്റെം സെൽ ആൻഡ് ടിഷ്യു എൻജിനിയറിംഗ് ലാബിലെ പ്രഫ. നെബു ജോർജ് തോമസ്, എംജി യൂണിവേഴ്സിറ്റിയിലെ ഇന്റർനാഷണൽ ആൻഡ് ഇന്റർ-യൂണിവേഴ്സിറ്റി സെന്റർ ഫോർ നാനോസയൻസ് ആൻഡ് നാനോടെക്നോളജി ഡയറക്ടറും എംജി യൂണിവേഴ്സിറ്റി മുൻ വൈസ് ചാൻസലറുമായ പ്രഫ. സാബു തോമസ്, ക്രൈസ്റ്റ് യൂണിവേഴ്സിറ്റിയുടെ ഫിസിക്സ് ആൻഡ് ഇലക്ട്രോണിക്സ് വകുപ്പിൽനിന്നുള്ള അസിസ്റ്റന്റ് പ്രഫസർ ഡോ. മാർട്ടിൻ ജോർജ് തോമസ്, സയന്റിഫിക് ഓഫീസർ ഡോ. ജെഫിൻ കെ ജോസ്, ജമ്മു ഇന്ത്യൻ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് ടെക്നോളജിയിലെ ബയോസയൻസ് ആൻഡ് ബയോഎൻജിനിയറിംഗ് വകുപ്പ് അസിസ്റ്റന്റ് പ്രഫ. ശിർഷ ബോസ്, പുഷ്പഗിരി റിസർച്ച് സെന്ററിലെ ഡോ. അമ്പാടി എ.എൻ. എന്നിവർ സഹകരിക്കുന്നു. ദീർഘകാലമായി നിലനിൽക്കുന്ന പ്രമേഹവ്രണ പ്രശ്നങ്ങൾക്ക് ഇതൊരു ശ്രദ്ധേയമായ പരിഹാരമായി മാറുമെന്ന് പുഷ്പഗിരി റിസർച്ച് സെന്റർ ഡയറക്ടർ റവ. ഡോ. മാത്യു മഴുവഞ്ചേരിൽ പറഞ്ഞു.

DR. NEBU GEORGE THOMAS AS ADJUNCT PROFESSOR (NATIONAL) AT MAHATMA GANDHI UNIVERSITY

Dr. Nebu George Thomas, Professor and Scientist, Stem Cell and Tissue Engineering Lab, Pushpagiri Research Centre has been appointed as Adjunct Faculty (Order Number: 8126/AD A 7/2026/എം.ജി.) at Mahatma Gandhi University (MG University), Kerala, in recognition of his academic and research expertise. In this role, he contributes to teaching, research, and other academic activities of the University.

മഹാത്മാഗാന്ധി സർവകലാശാല, കേരളം

സംഗ്രഹം

ഇന്റർനാഷണൽ ആൻഡ് ഇന്റർ യൂണിവേഴ്സിറ്റി സെന്റർ ഫോർ നാനോസയൻസ് ആൻഡ് നാനോടെക്നോളജി (IIUCNN)-ൽ Adjunct/ Visiting അധ്യാപകരുടെ പാനൽ അംഗീകരിച്ച് - ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു.

ഭരണ വിഭാഗം എ 7 സെക്ഷൻ

നമ്പർ. 8126/AD A 7/2026/എം.ജി.യു പ്രിയദർശിനി ഹിൽസ്,തീയതി: 09.09.2026

പരാമർശം:-1. IIUCNN ഡയറക്ടറുടെ 06.08.2026 ലെ കത്തുകൾ.
2. വൈസ് ചാൻസലറുടെ 04.09.2026 തീയതിയിലെ ഉത്തരവ്.
3. 19.04.2023 തീയതിയിലെ സ. ഉ. നം. 4260/AD A1/2023/എം.ജി.യു.
4. 23.05.2023 തീയതിയിലെ സർക്കുലർ നം. 26895/AD A1/3/എ ഡി എ1/AD A1.

ഉത്തരവ്

ഇന്റർനാഷണൽ ആൻഡ് ഇന്റർ യൂണിവേഴ്സിറ്റി സെന്റർ ഫോർ നാനോസയൻസ് ആൻഡ് നാനോടെക്നോളജി (IIUCNN)-ന്റെ എക്സിക്യൂട്ടീവ് കമ്മിറ്റി യോഗം ശിപാർശ ചെയ്ത Adjunct (National/International) / Visiting അധ്യാപകരുടെ പാനൽ അംഗീകരിക്കുന്നതിന് പരാമർശം (1) പ്രകാരം IIUCNN ഡയറക്ടർ അപേക്ഷ സമർപ്പിച്ചിരുന്നു. ടി അപേക്ഷ പരിഗണിച്ച്, ചുവടെ ചേർത്തിരിക്കുന്ന Adjunct (International/National) / Visiting അധ്യാപകരുടെ പാനൽ പരാമർശം (2) പ്രകാരം അംഗീകരിച്ച് ഉത്തരവായിരിക്കുന്നു.

Adjunct Professors (National)

Sl.No	Name	Address
1.	Dr. Raji Vijayamma	Assistant Professor, School of Biosciences, MGU
2.	Dr. Sreeja Sasidharan	Assistant Professor, School of Biosciences, MGU
3.	Dr. Noufal Kandoth	Associate Professor, School of Chemical Sciences, MGU
4.	Dr. Santhini Pulikkal Veettil	Assistant Professor, School of Chemical Sciences, MGU
5.	Prof. K. E. George	Former Professor, PSRT, CUSAT
6.	Prof. Rani Joseph	Former Professor, PSRT, CUSAT
7.	Dr. Abhilash Babu	Associate Professor, School of Social Sciences, MGU
8.	Dr. Partha Palik	Central University of Assam
9.	Dr.Nebu George Thomas	Pushpagiri College of Dental Science, Thiruvalla, Kerala
10.	Dr. Jiya Jose	Rajagiri College of Social Sciences, Cochin

DR. AMPADI AN ATTENDED TWO-DAY SENSITIZATION WORKSHOP ON GOOD LABORATORY PRACTICE

Dr. Ampadi AN, Veterinary Officer and Coordinator, Pushpagiri Research Centre attended a Two-Day Sensitization Workshop on Good Laboratory Practice (GLP) organized by the Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST) in association with the National GLP Compliance Monitoring Authority, New Delhi, on 7–8 September 2026 at SCTIMST, Poojapura.

76TH JBIC MEETING

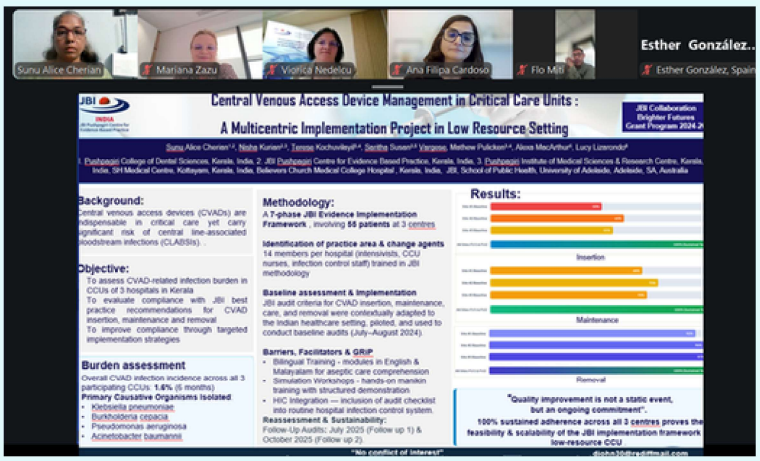
The JBI Collaboration Meeting 2026 was held online on 22–23 September 2026, bringing together approximately 100 JBIC members from around the world. Mrs. Nisha Kurian, Director, and Dr. Sunu Alice Cherian, Deputy Director, represented the Pushpagiri Centre for Evidence-Based Practice at the meeting. The meeting focused on JBI's future strategic plans and included presentations and discussions on various divisional and regional reports, providing an opportunity for members to share updates, strengthen collaboration, and contribute to the future direction of the JBI Collaboration.

JBI IGNITE 2026: EBHC METHODOLOGY SYMPOSIUM



JBI iGNITE 2026 was conducted as a fully online two-day symposium on 24–25 September 2026, extending the conversation from Adelaide to the global community and promoting greater accessibility to evidence-based health care (EBHC). The Pushpagiri Centre for Evidence-Based Practice was represented at the symposium by Mrs. Nisha Kurian, Director, and Dr. Sunu Alice Cherian, Deputy Director, who presented posters highlighting evidence-based research and implementation initiatives. Their participation contributed to the global exchange of knowledge and strengthened the Centre's engagement with the international evidence-based health care community.

Mrs. Nisha Kurian, Director, presented the poster titled "Willingness and Preparedness of Healthcare Professionals in a Nuclear Emergency – A Systematic Review and Meta-Analysis."



Dr. Sunu Alice Cherian, Deputy Director, presented the poster titled "Central Venous Access Device Management in Critical Care Units: A Multicentric Implementation Project in a Low-Resource Setting."

MAR ATHANASIOS ENDOWMENT AWARDS FOR PRC FACULTY MEMBERS AND TRAINEE

NAME AND DESIGNATION	AWARD TYPE AND CATEGORY	TITLE
Rev. Dr. Mathew Mazhavancheril, Director, PRC	Publication Grade I	• Bioglass in dentistry: A comprehensive review of current applications and innovative frontiers • In vitro and in vivo biocompatibility of a porcine cholecystic extracellular matrix (CECM) membrane for tissue regeneration • Development and evaluation of a fish skin-derived acellular dermal matrix for diabetic wound healing: In vitro and in vivo assessment
Dr. Nebu George Thomas, Scientist, Stem Cell and Tissue Engineering Lab	Publication Grade I	• Engineered core-shell nanocomposite fibres incorporating bioceramics and bioactive molecules for wound repair • Bioglass in dentistry: A comprehensive review of current applications and innovative frontiers • In vitro and in vivo biocompatibility of a porcine cholecystic extracellular matrix (CECM) membrane for tissue regeneration • Oral health disparities among children with special healthcare needs: a comparative cross-sectional study • Development and evaluation of a fish skin-derived acellular dermal matrix for diabetic wound healing: In vitro and in vivo assessment • Evaluation of Biocompatibility and In Vivo Response of Electrospun PLA/Nd203 Nanocomposite Fibers for Biomedical Scaffolding Applications • Effect of surface-engineered AuNPs on gene expression, bacterial interaction, protein denaturation, and toxicology assay: an in vitro and in vivo model.
	Publication Grade III	• Chapter 17 - Marine Biopolymers in Tissue Engineering Applications • Green Synthesis of Nanoparticles in Biomedicine • Biocompatible Nanocomposites - From Synthesis to Applications
	Seed Funding	• Evaluation of Bone regeneration potential of novel 3D printed scaffolds
	Special Recognition Award	• Patent • Post doc Fellowship: Biopolymers and Sensors Lab (LaBioS) at the Macromolecules Institute (IMA-UFRJ) Title: Core-Shell Nanocomposite `Membranes: Advancing Wound Healing ThroughPolymer Functionalization • Funded Projects- Extraction of Nanocellulose and Carrageenan from Seaweeds and preparation of polymer nanocomposites for tissue engineering and diabetic wound healing • Funded Projects- Optimierung der Zelladhasion auf Biomaterialien durch erflachenvernetzung

Mr. George Varghese, Assistant Professor and In Charge, Centre for Virology	Seed Funding	• Evaluating selected endothelial protein biomarkers as prognostic indicators from severe dengue - an in vitro clinical and machine learning approach
Dr. Aniket Naha Scientist & Student Coordinator, Medical Biotechnology and Computational Drug Designing Laboratory, Microbial technology and Infectious Disease Laboratory	Presentation in Conference-National Level -Grade II	• Harnessing Molecular Diagnostics and Clinical Decision Support: Bridging Resistance Detection with Actionable Insights • One Health Approach and Translational Research; Vector-Borne Disease Complications: Targeting AMR and Virulence in Shigella flexneri and ESβL-Producing E. coli • AntiTB Nanocarnosine Drug Composites: A Novel Drug Delivery System for Combating Antimicrobial Resistance in Pulmonary Tuberculosis
	Publication Grade I	• Pharmacokinetics Screening, Molecular Docking, and Dynamics Simulations Revealed Novel Antimicrobial Peptide NKLF2 Mutants as Potent Inhibitors of Mycobacterium tuberculosis • Novel antimicrobial peptide HFIAP-1 mutant as a β-lactamase inhibitor against extended-spectrum β-lactamases of Escherichia coli: a comprehensive in-silico approach
	Publication Grade III	• Enhanced efficacy of antibacterial activity of Carica papaya leaf extract in combination with susceptible antibiotics against nosocomial Acinetobacter baumannii
	Seed Funding	• Characterization and screening of novel bacterial strains from fermented food products for potential probiotic properties, safety assessments and technological properties: Evidence through in-silico and in-vitro approaches
	Special Recognition Award	• Best Researcher Award
Dr. Soumya RS Scientist, Cytogenetics and Biochemistry Laboratory	Publication Grade II	• Zero Discharge Synthesis of Silver Nanoparticles and Activated Carbon From Agricultural Residues • Metalloproteases: the effectors of inflammation in breast cancer progression • Pharmacological Insights into Banana Inflorescence - A Review of Antioxidant,Antimicrobial, Antidiabetic, and Anticancer Potential • Acute Promyelocytic Leukemia Unraveled: Biotechnological Approaches in Targeted Therapies and Molecular Mechanisms - A Review
	Seed Funding	• Role of Fatty Acid Methyl Esters in the Pathogenesis of Hepatic Steatosis: Mechanistic Insights and Therapeutic Targets

Dr. Ampadi AN Veterinary Officer and PRC Coordinator	Publication Grade I	• Comparative Transcriptome Analysis Reveals Tissue-SpecificExpression and Conservation of Mitochondrial Metal and Cofactor Genes in Buffalo
	Seed Funding	• Preclinical Assessment of Transparency-Inducing Gels: From Organ Visualization to Toxicological Safety Profiling
	Special Recognition Award	• Co-investigator of DBT BIRAC project titled: Translating multifunctional microneedles incorporated electrospun • Gelatin/PLGA nanocomposites for diabetic wound healing
Dr. Ajay Krishnan U Scientist, Molecular Biology Laboratory	Publication Grade I	• 5-Aminoimidazole-4-carboxamide-1-ß-d-ribofuranoside ameliorates lipotoxicity through enhanced reticulophagy in HepG2 cells
	Seed Funding	• Investigating the Effect of Calotropis gigantea Extract on γ-Secretase Modulation:An In Vitro Approach
Mrs. Nisha Kurian Assistant Professor and Director PCEBP	Presentation in Conference-International Level -Grade 1	• Incidence of Central Line-Associated Blood Stream Infection among patientsadmitted in Intensive Care Units in India - A Systematic Review and Meta Analysis
	Presentation in Conference-International Level -Grade 1	• Current Tobacco Cessation Services in Southern States
Dr. Betsy A Jose Assistant Professor and Project Coordinator, cancer researchand Public Health	Publication Grade I	• Exploring pension access and health-seeking behavior among older adults in South Kerala: A mixed-methods study • Exposure, Environment, and Well Being. A Cross-Sectional Study of the Health Hazards, the Working Environment and the Quality of Life Among Cashew Workers in South Kerala, India
	Publication Grade II	• Deciphering the Menstrual Cup Use: Proportion and Barriers Among Menstruating Women in Kerala, India
	Seed Funding	• Profiling Antimicrobial Resistance in Salivary Samples of Cleaning Staff and Its Association with Their Knowledge, Attitude, and Skills on Infection Prevention and Control in a Tertiary Care Centre in South Kerala
Dr. Dayana K Scientist, Pharmaceuticals Laboratory	Special Recognition Award	• Award for Ph.D Degree -Synthesis, Characterization and Antimicrobial Evaluation of Some Novel Pyrazole and Thiadiazole Derivatives.
Dr. Reeba Mary Issac Assistant Professor, HLA and Tissue Typing Lab	Seed Funding	• Evaluation of CXCL1 and CXCR2 Expression in Breast Cancer and Its Clinicopathological Correlation.
Dr. Jules Kurian Mathew Senior resident, PRC	Seed Funding	• Diagnostic Accuracy and Clinicopathological, Histomorphological and Immunofluorescence Predictors in Interface Dermatitis: A Prospective Diagnostic Model-Based Study
Dr. Sunu Alice Cherian **D**eputy Director, PCEBP	Presentation in Conference-International Level -Grade 1	• Prevalence of Periodontitis in the Context of Post-Traumatic Stress Disorder: A Systematic Review and Meta-Analysis
	Seed Funding	• Periodontal disease burden among Indian adults; A cross sectional study of prevalance
Ms. Ritty Gold P P Project Assistant, Cytogenetics and Biochemistry Laboratory	Seed Funding	• Exploring FAME-Driven Mitochondrial Dysregulation in HepG2 cell lines: an invitro study


Congratulations
Congratulations

DHR–ICMR SPONSORED NATIONAL WORKSHOP ON ONE HEALTH RESEARCH



Pushpagiri Research Centre organized 5 Days DHR–ICMR Sponsored National Workshop on "Biomedical Innovations in One Health Research for Combating MDR/XDR Pathogens Through In-Silico, In-Vitro and In-Vivo Methodologies" Organized by Pushpagiri Research Centre (PRC), the workshop brought together more than 50 participants representing diverse academic, clinical and research backgrounds from institutions across Kerala, Tamil Nadu and Karnataka. The participants included undergraduate and postgraduate students, research scholars, postdoctoral fellows, scientists, faculty members, doctors and other medical and research professionals. The multidisciplinary participation reflected the broad scope of antimicrobial resistance (AMR) research and the importance of collaborative approaches in addressing MDR/XDR pathogens.

The workshop was structured around the 'One Health Approach', recognising the interconnected dimensions of antimicrobial resistance involving human health, microorganisms, animals and the environment. A major feature of the programme was its systematic progression through three complementary research domains — in-silico → in-vitro → in-vivo — enabling participants to understand how computational approaches, laboratory investigations and animal-based research can be integrated into biomedical research.



Speakers & Technical Experts of the DHR-ICMR Workshop

INAUGURATION AND SCIENTIFIC PROGRAMME

The workshop commenced on 22nd September 2026 with registration and kit distribution, followed by an ice-breaking session and pre-assessment. The inaugural function was held at Lecture Hall–1 and included the prayer song by Pushpagiri College of Allied Health Sciences, welcome address by Dr. Gaddam Vijaylakshmi, Vice Principal – UG Academics, presidential address by Dr. Vikram Gowda N R, Vice-Principal – Administration & Co-PI, and the inaugural address by Rev. Dr. Mathew Mazhavancheril, Director – PIMSRC, followed by felicitation address by the speakers of the day and Vote of Thanks by Dr. Aniket Naha – Organizing Secretary and PI of the Project.



Inauguration Ceremony of the 5-Day DHR-ICMR National Workshop on 22nd September 2026

The opening scientific sessions featured experts from clinical medicine, pharmacology, infectious diseases and antimicrobial research. Dr. Aravind R, Professor and Head, Department of Infectious Diseases, Government Medical College, Thiruvananthapuram, addressed antimicrobial resistance in the clinical era on the topic 'Antimicrobial Resistance in the Clinical Era: Bridging Evidence, Stewardship, and Innovation for Better Patient Outcomes'. Dr. Dhanya Sasidharan Palappallil, Professor of Pharmacology, Government Medical College, Kottayam, discussed the role of clinical pharmacology in addressing AMR on the topic 'The Role of Clinical Pharmacology in Addressing Antimicrobial Resistance: Challenges and Opportunities'. Dr. S. R. Madhan Shankar, Chief Technical and Operations Officer, Kongunadu Arts and Science College, Coimbatore, presented perspectives on the discovery of novel beta-lactam inhibitors and the journey of antimicrobial innovation and delivered a talk on 'The Invention Journey: Discovering Novel Beta-Lactam Inhibitors and Beyond'.

The first day also introduced participants to structural bioinformatics, protein structure modelling, small-compound databases, molecular docking and intermolecular interaction profiling.

FROM COMPUTATIONAL RESEARCH TO CLINICAL MICROBIOLOGY

The second day expanded the computational component through database searches, sequence analysis, protein energy minimisation, RMSD analysis & mutant generation.

Dr. Kumar KM, Associate Professor, Department of Bioinformatics, School of Life Sciences, Pondicherry Central University, delivered a lecture on computational strategies for AMR drug discovery as he spoke on the topic 'From Genome to Drug Target: Computational Strategies for AMR Drug Discovery', highlighting the journey from genome to potential drug targets.



INTRODUCTION TO GUESTS SPEAKERS BY VARIOUS PRC FACULTIES

The workshop then transitioned into practical clinical microbiology. Participants received hands-on exposure to sterilisation, media preparation, handling of clinical pathogens, demonstration of good laboratory practices in a BSL-2 facility, and morphological and biochemical characterisation of microorganisms.

On the third day, the clinical microbiology component progressed to phenotypic characterisation, antimicrobial susceptibility testing, MIC determination, mechanisms of antibiotic resistance and antibacterial assays. The programme also included a session by Dr. Sanjeev Nair, Professor, Department of Respiratory Medicine, Government Medical College, Thiruvananthapuram, addressing drug-resistant tuberculosis and current challenges, advances and future directions in its control and management. His wider professional contributions include involvement with national and state-level tuberculosis and respiratory disease initiatives. The next talk was by Dr. Keshavamurthy M., Assistant Professor, Department of Biotechnology, REVA University, Bengaluru, discussed medicinal plant endophytes as a potential source of novel antimicrobials against multidrug-resistant pathogens and delivered lecture on 'Exploring Medicinal Plant Endophytes for Novel Antimicrobials Against Multidrug- Resistant Pathogens'. The third lecture was by Dr. Janani Remyaprabha Jnana Thapaswini, Associate Professor, Santhigiri Ayurveda Medical College, discussed phytochemical approaches to infectious disease management. Through her talk on 'Bridging Ayurveda and Modern Science: Phytochemical Approaches to Infectious Disease Management' providing an interdisciplinary perspective linking traditional knowledge and modern biomedical research.



Glimpse of Speakers for the 5-Day DHR-ICMR National Workshop on 22nd September 2026



Glimpse of Hands-on-Training for Participants by various Technical Experts



Glimpse of Speakers for the 5-Day DHR-ICMR National Workshop on 22nd September 2026

CELL CULTURE, ASSAYS AND EXPERIMENTAL RESEARCH

The workshop subsequently progressed into cell culture and experimental biomedical methodologies. Participants received practical training in media preparation, cell-line maintenance and cell seeding, followed by experimental setup for fluorescence and cell-proliferation assays. Under the guidance of Dr. Arun KB, Dr. Ajay Krishnan U and Dr. Soumya RS, participants worked with DCFDA and MTT assays, followed by data analysis involving fluorescence microscopy and ELISA-based measurements. An HPLC demonstration further exposed participants to analytical approaches relevant to biomedical research.

The fourth day also featured lectures addressing host defence and infectious complications. Dr. Arun KB, Assistant Professor, Department of Life Sciences, CHRIST (Deemed to be University), Bengaluru, spoke on 'Reprogramming Host Defense: Advanced Cell Culture Approaches to Combat Drug-Resistant Tuberculosis' discussing advanced cell culture approaches for combating drug-resistant tuberculosis.

Dr. Rojin Abraham, Professor and HOD, Department of Neurosurgery, Believers Church Medical College Hospital, Tiruvalla, discussed antimicrobial resistance in traumatic brain injury and the prevention and management of infectious complications through his talk on 'Antimicrobial Resistance in Traumatic Brain Injury: Prevention and Management of Infectious Complications'.

IN-VIVO RESEARCH AND EMERGING APPROACHES

The final day introduced participants to the in-vivo component of biomedical research. The programme started on bacteriophage therapy as an alternative therapeutic strategy against antimicrobial resistance, presented by Dr. H. K. Makari, Associate Professor, Maharani's Science College for Women, Mysore. Dr. Nebu George Thomas, Professor, Department of Periodontology, Pushpagiri College of Dental Sciences and Scientist, Stem Cell and Tissue Engineering Lab, PRC, who delivered a talk on 'Advances in Animal Studies in Biomedical Research'. This was followed by a lecture from Dr. Sachin J. Shenoy, Scientist, Medical Devices Engineering, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, on 'Research guidelines and regulations for biomedical research in small animals'. Participants subsequently visited the animal house and observed experimental procedures involving small animals in accordance with applicable CCSEA guidelines.

VALEDICTORY PROGRAMME

The workshop concluded on 26th September 2026 with the valedictory function held at Lecture Hall–1. The programme included a guest lecture by Dr. Geetanjali Sageena, Scientist-C, Division of HRD, DHR on 'DHR funding landscape: Enabling research excellence and institutional leadership', followed by an interaction on antimicrobial resistance updates at Pushpagiri Medical College Hospital. Dr. Aneeta Mary Jacob, Associate Professor and HICC-in-charge, presented "Decoding PIMS antibiogram – from graphs to empirical treatment," providing a clinical perspective on the interpretation and application of antibiogram data.

The valedictory programme also included a felicitation address by Dr. Santhosh Pillai, Vice-Principal – PIMSRC / Principal – PIMSRC, participation by Dr. H. K. Makari, a workshop summary presented by Dr. Aniket Naha, Scientist & PI, participant feedback, and the introduction of Bioradiance – 2027 by Dr. Soumya RS, Scientist & Co-PI. The programme concluded with certificate distribution and the national anthem.

BUILDING PRACTICAL RESEARCH CAPACITY

Across the five days, the workshop comprised 13 hands-on sessions spanning structural bioinformatics and computational research, clinical microbiology, cell culture and experimental assays, and animal-based research. The programme was designed not merely as a series of lectures, but as an integrated learning experience combining expert lectures, practical demonstrations, hands-on training and participant interaction. A pre-assessment was conducted at the beginning of the programme and a post-assessment at its conclusion to assess participants' learning in relation to the workshop content.

The success of the programme was supported by the coordinated efforts of the PRC team, faculty members, technical experts, volunteers, IT and technical support personnel and research trainees. Special contributions from the organising and scientific team helped ensure the smooth execution of the academic, laboratory and logistical components throughout the five days.

The workshop provided a platform for participants from varied disciplines and institutions to interact with experts and gain exposure to contemporary approaches in AMR research. The progression from computational investigation to laboratory experimentation and in-vivo research, within a One Health framework, represented the central academic theme of the programme.

The five-day workshop concluded with appreciation for the active participation and enthusiasm of the delegates and with an emphasis on carrying the knowledge, practical exposure and interdisciplinary perspectives gained during the programme into their future academic, research and professional activities.



Valedictory Ceremony of the 5-Day DHR-ICMR National Workshop on 26th September 2026



DR. ANIKET NAHA AS SPEAKER FOR ICMR-SPONSORED WORKSHOP

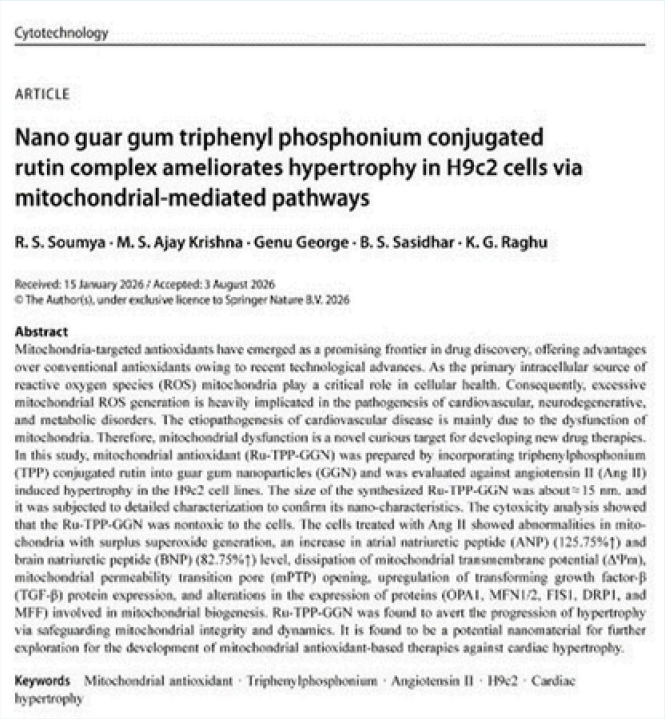
Dr. Aniket Naha served as an invited speaker at the ICMR-sponsored 6-day workshop, “Advances in Biomedical Research: Translating Biomedical Discoveries into Clinical Applications (TBDCA-2026)”. He delivered a talk on “Integrating Molecular Docking and Computational Modeling in Modern Drug Discovery”, highlighting emerging computational approaches to accelerate drug development.

DR. ANIKET NAHA SERVED AS A RESOURCE PERSON FOR THE 10-DAYS PROFESSIONAL DEVELOPMENT PROGRAMME

Dr. Aniket Naha, Scientist, Pushpagiri Research Centre (PRC), has been invited as Resource person for the ten days professional development programme on “Emerging Trends and Advancements in Bioinformatics”, organized by the PG and Research Department of Biotechnology, Kongunadu Arts and Science College (Autonomous), Coimbatore as an online talk on Day1- 15th Sept 2026, 5-6 PM.



PUBLICATIONS



Cytotechnology

ARTICLE

Nano guar gum triphenyl phosphonium conjugated rutin complex ameliorates hypertrophy in H9c2 cells via mitochondrial-mediated pathways

R. S. Soumya · M. S. Ajay Krishna · Genu George · B. S. Sasidhar · K. G. Raghu

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Abstract
Mitochondria-targeted antioxidants have emerged as a promising frontier in drug discovery, offering advantages over conventional antioxidants owing to recent technological advances. As the primary intracellular source of reactive oxygen species (ROS) mitochondria play a critical role in cellular health. Consequently, excessive mitochondrial ROS generation is heavily implicated in the pathogenesis of cardiovascular, neurodegenerative, and metabolic disorders. The etiopathogenesis of cardiovascular disease is mainly due to the dysfunction of mitochondria. Therefore, mitochondrial dysfunction is a novel curious target for developing new drug therapies. In this study, mitochondrial antioxidant (Ru-TPP-GGN) was prepared by incorporating triphenylphosphonium (TPP) conjugated rutin into guar gum nanoparticles (GGN) and was evaluated against angiotensin II (Ang II) induced hypertrophy in the H9c2 cell lines. The size of the synthesized Ru-TPP-GGN was about ≈ 15 nm. and it was subjected to detailed characterization to confirm its nano-characteristics. The cytoxicity analysis showed that the Ru-TPP-GGN was nontoxic to the cells. The cells treated with Ang II showed abnormalities in mitochondria with surplus superoxide generation, an increase in atrial natriuretic peptide (ANP) (125.75%↑) and brain natriuretic peptide (BNP) (82.75%↑) level, dissipation of mitochondrial transmembrane potential ($\Delta\Psi m$), mitochondrial permeability transition pore (mPTP) opening, upregulation of transforming growth factor-β (TGF-β) protein expression, and alterations in the expression of proteins (OPA1, MFN1/2, FIS1, DRP1, and MFF) involved in mitochondrial biogenesis. Ru-TPP-GGN was found to avert the progression of hypertrophy via safeguarding mitochondrial integrity and dynamics. It is found to be a potential nanomaterial for further exploration for the development of mitochoandrial antioxidant-based therapies against cardiac hypertrophy.

Keywords Mitochondrial antioxidant · Triphenylphosphonium · Angiotensin II · H9c2 · Cardiac hypertrophy

1.Soumya RS, Krishna MSA, George G, Sasidhar BS, Raghu KG. Nano guar gum triphenyl phosphonium conjugated rutin complex ameliorates hypertrophy in H9c2 cells via mitochondrial-mediated pathways. Cytotechnology. 2026;78(5):189. doi:10.1007/s10616-026-01045-0. (MoU and Collaboration with CSIR NIIST, Thiruvananthapuram) (IF-2.2)



Journal of Food Measurement and Characterization
https://doi.org/10.1007/s11694-026-04891-w

REVIEW PAPER

Sustainable extraction of bioactive compounds from agro-industrial waste: a critical evaluation of techniques, scalability, and industrial potential

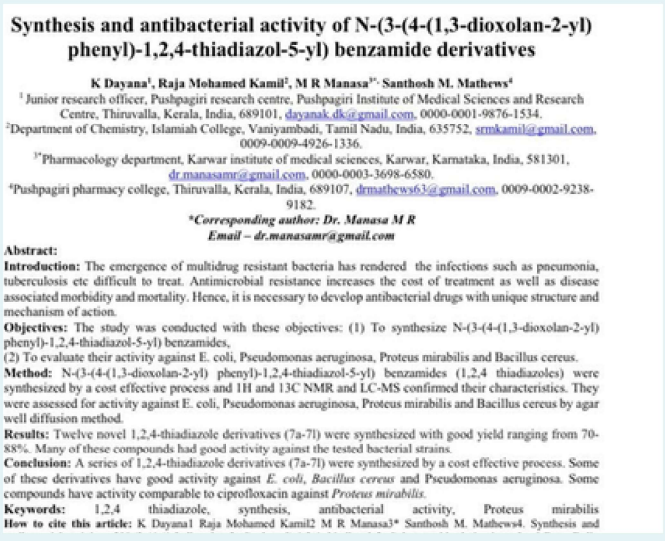
Monishka[1] · Subhadip Haldar[1] · Soumya R. S.[2] · Aravind Madhavan[3] · Arun K. B.[1]

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Abstract
The use of bioactive compounds in the food, pharmaceutical, and chemical industries, among other commercial sectors, highlights the need for an appropriate, standardized process for extracting these active substances from various sources. Polyphenols, polysaccharides, and a wide range of various phytochemicals, including colors, are among the beneficial elements found in fruit waste. It is assumed that the current review article will extract bioactive components from waste products, including cotton, tobacco, winery, and fruit and vegetable waste, using a variety of extraction techniques. High-value chemicals have been recovered from winery-processed tobacco waste, a by-product usually discarded due to its nicotine content, with only a small percentage recycled using both traditional and non-conventional methods. Large volumes of garbage are produced during the treatment of crops and fruits, with discarded peels accounting for 90 – 92% of the waste, and 25–30% of it being a whole-commodity category. However, most of these wastes consist of seed, peel, rind, and pomace and are usually highly concentrated in bioactive compounds. These materials are rich in lipids, carotenoids, polyphenols, dietary fibers, and enzymes, as well as bioactive compounds that may be advantageous. This review article focuses on waste materials from various sources, the bioactive compounds they contain, the methods for extracting those compounds, and the potential applications of the resulting compounds.

Keywords Sustainable Extraction · Bioactive Compounds · Plant Extracts · Conventional and Green Extraction

2. Monishka, Haldar S, Soumya RS, Madhavan A, Arun KB. Sustainable extraction of bioactive compounds from agro-industrial waste: a critical evaluation of techniques, scalability, and industrial potential. J Food Meas Charact. 2026. doi:10.1007/s11694-026-04891-w. (MoU and Collaboration with Christ University, Bangalore) (IF-3.6)



Synthesis and antibacterial activity of N-(3-(4-(1,3-dioxolan-2-yl) phenyl)-1,2,4-thiadiazol-5-yl) benzamide derivatives

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Abstract:
Introduction: The emergence of multidrug resistant bacteria has rendered the infections such as pneumonia, tuberculosis etc difficult to treat. Antimicrobial resistance increases the cost of treatment as well as disease associated morbidity and mortality. Hence, it is necessary to develop antibacterial drugs with unique structure and mechanism of action.
Objectives: The study was conducted with these objectives: (1) To synthesize N-(3-(4-(1,3-dioxolan-2-yl) phenyl)-1,2,4-thiadiazol-5-yl) benzamides,
(2) To evaluate their activity against E. coli, Pseudomonas aeruginosa, Proteus mirabilis and Bacillus cereus.
Method: N-(3-(4-(1,3-dioxolan-2-yl) phenyl)-1,2,4-thiadiazol-5-yl) benzamides (1,2,4 thiadiazoles) were synthesized by a cost effective process and 1H and 13C NMR and LC-MS confirmed their characteristics. They were assessed for activity against E. coli, Pseudomonas aeruginosa, Proteus mirabilis and Bacillus cereus by agar well diffusion method.
Results: Twelve novel 1,2,4-thiadiazole derivatives (7a-7l) were synthesized with good yield ranging from 70-88%. Many of these compounds had good activity against the tested bacterial strains.
Conclusion: A series of 1,2,4-thiadiazole derivatives (7a-7l) were synthesized by a cost effective process. Some of these derivatives have good activity against *E. coli*, *Bacillus cereus* and Pseudomonas aeruginosa. Some compounds have activity comparable to ciprofloxacin against *Proteus mirabilis*.
Keywords: 1,2,4 thiadiazole, synthesis, antibacterial activity, Proteus mirabilis
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RESEARCH ARTICLE

Fabrication and Healing Potential of Polylactic Acid /Clay/Nd_2O_3 Nanocomposite Fibers in Diabetic Wound Therapy

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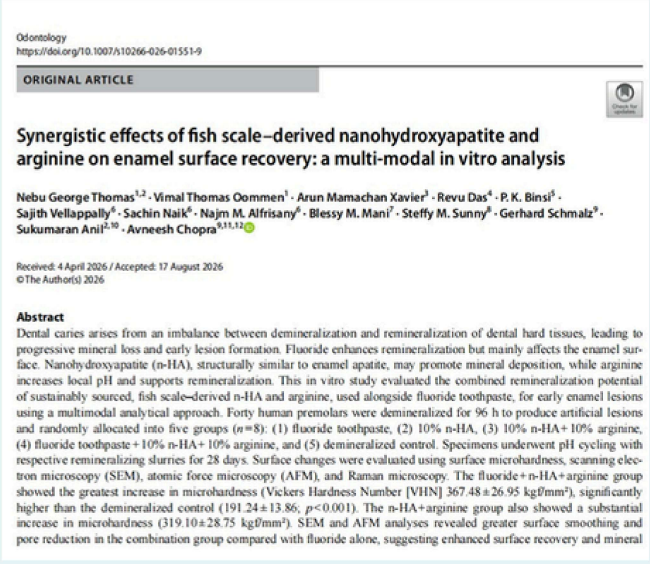
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Keywords: biocompatibility | diabetic wound healing | nanoclay | neodymium oxide | PLA nanocomposite fiber

ABSTRACT

Chronic diabetic wounds are difficult to heal due to impaired neovascularization, dysregulated tissue repair, and prolonged inflammation. To address these challenges, PLA/nanoclay/Nd_2O_3 nanocomposite fiber mats were fabricated by electrospinning. Structural and morphological analyses confirmed successful incorporation and uniform dispersion of nanoclay and Nd_2O_3 within the PLA matrix. Nanoclay modulated the scaffold surface, while Nd_2O_3 enhanced mechanical strength. The intercalated nanoclay network further improved load transfer, reduced fiber diameter, and enhanced surface wettability, supporting cellular interactions. The scaffold showed more than 90% cell viability across all tested samples, demonstrating good cytocompatibility. The optimized scaffold exhibited significant antibacterial activity against methicillin-resistant Staphylococcus aureus (MRSA). The enhanced vascular density of the scaffolds in the chick chorioallantoic membrane (CAM) assay confirms their angiogenic potential. The scaffold also demonstrated controlled degradation, with 8.1 ± 0.5% weight loss after 28 days in simulated body fluid. In vivo evaluation using a diabetic rat wound model showed accelerated wound contraction, complete reepithelialization, neovascularization and minimal inflammatory response by day 21. The findings of this study suggest that PLA/Clay/Nd_2O_3 bioactive nanofibrous scaffolds have considerable potential for diabetic wound-healing applications.

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ORIGINAL ARTICLE

Synergistic effects of fish scale–derived nanohydroxyapatite and arginine on enamel surface recovery: a multi-modal in vitro analysis

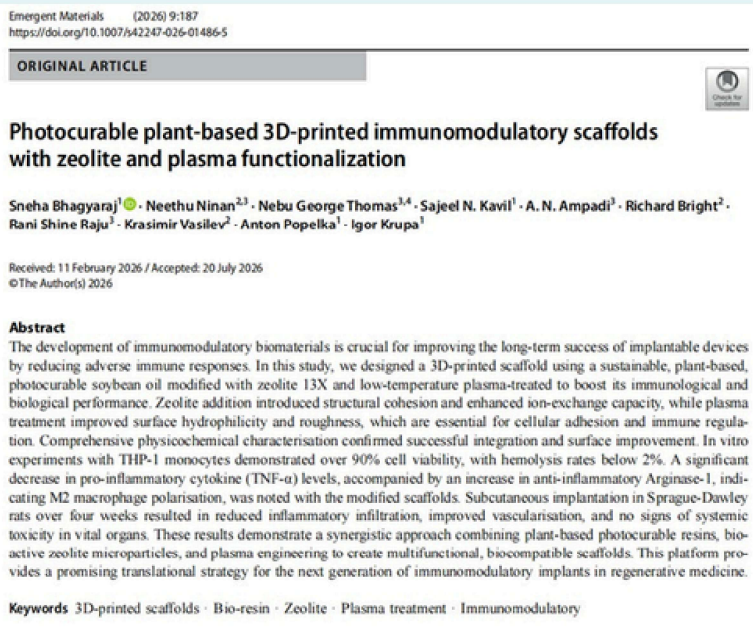
Nebu George Thomas[1,2] · Vimal Thomas Oommen[1] · Arun Mamachan Xavier[3] · Revu Das[4] · P. K. Binsi[5] · Sajith Vellappally[6] · Sachin Naik[6] · Najm M. Alfrisany[6] · Blessy M. Mani[7] · Steffy M. Sunny[8] · Gerhard Schmalz[9] · Sukumaran Anil[2,10] · Avneesh Chopra[9,11,12]

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Abstract

Dental caries arises from an imbalance between demineralization and remineralization of dental hard tissues, leading to progressive mineral loss and early lesion formation. Fluoride enhances remineralization but mainly affects the enamel surface. Nanohydroxyapatite (n-HA), structurally similar to enamel apatite, may promote mineral deposition, while arginine increases local pH and supports remineralization. This in vitro study evaluated the combined remineralization potential of sustainably sourced, fish scale–derived n-HA and arginine, used alongside fluoride toothpaste, for early enamel lesions using a multimodal analytical approach. Forty human premolars were demineralized for 96 h to produce artificial lesions and randomly allocated into five groups ($n=8$): (1) fluoride toothpaste, (2) 10% n-HA, (3) 10% n-HA+ 10% arginine, (4) fluoride toothpaste+10% n-HA+ 10% arginine, and (5) demineralized control. Specimens underwent pH cycling with respective remineralizing slurries for 28 days. Surface changes were evaluated using surface microhardness, scanning electron microscopy (SEM), atomic force microscopy (AFM), and Raman microscopy. The fluoride+n-HA+arginine group showed the greatest increase in microhardness (Vickers Hardness Number [VHN] 367.48±26.95 kgf/mm²), significantly higher than the demineralized control (191.24±13.86; $p<0.001$). The n-HA+arginine group also showed a substantial increase in microhardness (319.10±28.75 kgf/mm²). SEM and AFM analyses revealed greater surface smoothing and pore reduction in the combination group compared with fluoride alone, suggesting enhanced surface recovery and mineral

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ORIGINAL ARTICLE

Photocurable plant-based 3D-printed immunomodulatory scaffolds with zeolite and plasma functionalization

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Abstract

The development of immunomodulatory biomaterials is crucial for improving the long-term success of implantable devices by reducing adverse immune responses. In this study, we designed a 3D-printed scaffold using a sustainable, plant-based, photocurable soybean oil modified with zeolite 13X and low-temperature plasma-treated to boost its immunological and biological performance. Zeolite addition introduced structural cohesion and enhanced ion-exchange capacity, while plasma treatment improved surface hydrophilicity and roughness, which are essential for cellular adhesion and immune regulation. Comprehensive physicochemical characterisation confirmed successful integration and surface improvement. In vitro experiments with THP-1 monocytes demonstrated over 90% cell viability, with hemolysis rates below 2%. A significant decrease in pro-inflammatory cytokine (TNF-α) levels, accompanied by an increase in anti-inflammatory Arginase-1, indicating M2 macrophage polarisation, was noted with the modified scaffolds. Subcutaneous implantation in Sprague-Dawley rats over four weeks resulted in reduced inflammatory infiltration, improved vascularisation, and no signs of systemic toxicity in vital organs. These results demonstrate a synergistic approach combining plant-based photocurable resins, bioactive zeolite microparticles, and plasma engineering to create multifunctional, biocompatible scaffolds. This platform provides a promising translational strategy for the next generation of immunomodulatory implants in regenerative medicine.

Keywords 3D-printed scaffolds · Bio-resin · Zeolite · Plasma treatment · Immunomodulatory

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