

PUSHPAGIRI . RESEARCH CENTRE UPDATES

Visit to MG University Kottayam for planning for future collaborations



The exuberant Scientists and Faculties of Pushpagiri Research Centre (PRC) under the leadership of our Director, **Rev. Fr. Dr. Mathew Mazhavancheril** visited MG University Kottayam on 11th August, 2023. The research team had a meeting with **Dr. Nandakumar Kalarikkal**, Senior Professor (Ex-Director & Chair) in School of Pure and Applied Physics and Honorary Director International and Inter University, Centre for Nanoscience and Nanotechnology. He is also serving as the Director-in-Charge, School of Nanoscience and Nanotechnology, Mahatma Gandhi University, Kottayam - 686 560, Kerala, India. The research team from PRC presented their research domain and their research works in the meeting which included presentations from:

- Dr. Nebu George Thomas** – Tissue Engineering and Regenerative Medicine Laboratory
- Dr. Yogesh Bharat Dalvi** – Molecular Biology Laboratory
- Dr. Soumya R. S** – Biochemistry Laboratory
- Dr. Aniket Naha** – Medical Biotechnology and Computational Drug Designing Laboratory

The Research Director Rev. Fr. Dr. Mathew Mazhavancheril introduced the scientists of PRC and briefed the research activities and achievements of PRC initially. The research team had fruitful discussions with Prof. Nandakumar Kalarikkal and his scholars. Both the institutes have been collaborating since long and produced several publications and patents in international peer-reviewed journals of high repute. The members discussed and planned on future collaborations and research activities to be undertaken. The PRC team thereafter visited different laboratories and saw the various advanced instrumentation facilities and their accessibilities for using them for our future researches. The meeting ended with the scientists wishing good luck and fruitful collaborations for joint future endeavors.



Academia-Industrial collaboration



In an exciting development, Pushpagiri Research Centre (PRC) hosted a significant meeting on August 16th, marking a pivotal step towards fostering Academia-Industrial collaboration. The event witnessed a constructive dialogue between PRC's esteemed scientists and researchers, led by Research Director Rev. Dr. Mathew Mazhavancheril, and Dr. Sreeraj Gopi, (the Co-founder and Director of Molecules Food Solutions Private Limited.)

The rendezvous, held at the Pushpagiri Research Centre, was marked by enthusiastic participation from both sides. Dr. Sreeraj Gopi, a prominent figure in the field of food solutions, shared valuable insights from the industry and highlighted the potential avenues for collaboration between academia and the industry. The interaction revolved around synergizing research efforts, sharing expertise, and jointly addressing key challenges faced by both academia and industry.

The main thrust of the discussion was the exploration of opportunities for PRC's foray into Academia-Industrial collaboration. With its rich history of research excellence, PRC aims to bridge the gap between theoretical advancements and practical implementations. By partnering with industry leaders like Molecules Food Solutions Private Limited, PRC is poised to contribute significantly to innovative solutions, technological advancements, and skill development that align with real-world industrial needs.

Rev. Dr. Mathew Mazhavancheril, Research Director at PRC, expressed his optimism about the collaboration's potential to catalyze groundbreaking advancements. He emphasized the need for academia and industry to collaborate closely, as such partnerships have the potential to drive meaningful change and sustainable progress.

Both parties agreed to embark on further discussions to delineate the specifics of their collaboration. This pioneering effort signifies a crucial step forward in strengthening the relationship between academia and the industry, fostering an environment of mutual learning and growth.

As PRC and Molecules Food Solutions Private Limited prepare to venture into this promising partnership, the future holds the promise of cutting-edge research, innovative solutions, and the integration of academia's intellectual vigor with the industry's practical acumen. This milestone meeting undoubtedly sets the stage for a new era of collaborative excellence.



RESEARCH



congratulations



Dr. G MEENU, Dr. RAKHI MANOHAR, Dr. VIMAL THOMAS OOMMEN

The young innovation program that was organized and conducted by the Kerala Government at Kannur, the post graduate students of pushpagiri college of dental sciences holds the 1st place for their project. The team includes Dr. Meenu G, Dr. Rakhi Manohar, Dr. Vimal Thomas Oommen, Currently pursuing their post graduation from department of periodontology, Puhpagiri College of Dental Sciences. The topic presented was regarding the bonegrafts that was developed from fish bones, Under the guidance of Dr. Thomas George V (Prof. & Head, Department Of Periodontology), Dr. Nebu George Thomas (Scientist & Prof, Pushpagiri Research centre And Department Of Periodontology), Dr. Binci P K (Scientist, CIFT). Scientific help for the development of fish bone based bone grafts are done in CIFT and Pushpagiri Research Centre. Work will be performed at the Tissue Engineering & Regenerative Medicine Lab of PRC.

PUSHPAGIRI RESEARCH CENTRE ONAM CELEBRATION



RESEARCH CENTRE PUBLICATIONS

1

CHAPTER

15

Phospholipase activities in cardiovascular disease and its role as a potential biomarker in heart failure

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1 Introduction

Despite the massive advancements in medical therapeutics, coronary artery disease (CAD) has remained the prominent trigger of mortality worldwide in recent decades. The existing knowledge on the evaluation of cardiovascular risk is insufficient, and it merely represents the

myocardial infarction and is a chief contributor to multiple peripheral vascular diseases (PVD) (Alfarisi et al., 2020; Ambrose and Bhullar, 2019; Libby et al., 2019). This is accredited, in part, to environmental factors, traditional risk factors, and stressful lifestyles. However, in the last few decades many conventionally created atheroprotective and cardioprotective medications based

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2

Isolation, Culture, and Characterization of Dental Pulp Stem Cells from Human Deciduous and Permanent Teeth

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Anil, S., Thomas, N.G., Chaliserry, E.P., Dalvi, Y.B., Ramdoss, R., Vellappally, S. Isolation, Culture, and Characterization of Dental Pulp Stem Cells from Human Deciduous and Permanent Teeth. *J. Vis. Exp.* (1): e65767. doi:10.3791/65767 (2023).

Abstract

In the realm of regenerative medicine and therapeutic applications, stem cell research is rapidly gaining traction. Dental pulp stem cells (DPSCs), which are present in both deciduous and permanent teeth, have emerged as a vital stem cell source due to their accessibility, adaptability, and innate differentiation capabilities. DPSCs offer a readily available and abundant reservoir of mesenchymal stem cells, showcasing impressive versatility and potential, particularly for regenerative purposes. Despite their promise, the main hurdle lies in effectively isolating and characterizing DPSCs, given their representation as a minute fraction within dental pulp cells. Equally crucial

3



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Ganoderma applanatum (Pers.) Pat. augments antitumor activity of doxorubicin and provides chemoprevention to murine tumor model

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Doxorubicin (DOX) is a chemotherapeutic drug, used widely in the treatment of a variety of solid and hematological malignancies. However, its clinical utility is markedly reduced by dose-dependent cardiotoxicity. In the present study, Dalton lymphoma Ascites (DLA) cell line was administered to create a solid tumor in a murine model. DOX (25 mg/kg body wt) was administered intraperitoneally in overnight fasted Swiss albino mice to induce cardiac toxicity and hepatotoxicity. Thirty minutes before administering the chemotherapeutic drug, water-alcohol extract of the medicinal mushroom *Ganoderma applanatum* (GAWE) was administered to allotted groups. After five days, the extent of heart damage was analyzed by Electrocardiogram (ECG), further blood serum parameters, such as SGOT, SGPT, ALP, CK-MB, and LDH as well as antioxidants, such as GSH, GPx, and tissue peroxidation by MDA level was determined for both liver and heart tissues. The mode of prevention by the mushroom extract from the damage caused by DOX at the molecular level and alterations in tissue morphology by histopathology was also analyzed. The increase in blood serum parameters and MDA levels were significantly reduced with the GAWE administration. GAWE also upregulated heart and liver antioxidant enzymes and reduces ST, QT interval, and QRS complex, and increased heart rate as compared to DOX treated group. GAWE dose-dependently mitigated DOX-induced cellular discrepancies as evidenced by gene expression study and histological analysis. Hence, it can be concluded that the water-alcohol extract of *Ganoderma applanatum* (GAWE), is a potent candidate for adjuvant chemotherapy in cancer treatment as it effectively mitigated organ system drug-induced toxicities.

Keywords: Artist's Fungus, Cancer, Cardioprotection

4

Chapter

Toxicity of Natural Hydroxyapatite

Saumya John, Rakhi Manoharan, Kavya Suresh, Lekshmi Mini, Nibu Varghese, Sajith Vellappally and Nebu George Thomas

Abstract

Hydroxyapatite (HA) has been extensively researched in bone regeneration procedures for its close similarity with natural bone in composition and also due to its osteoconductive and bone healing properties. Natural hydroxyapatite (NHA) is

5

Original Article

Photofunctionalization of Dental Implant Surfaces - A Histomorphometric Animal Study

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ABSTRACT Aims: To compare and evaluate the degree of osseointegration of UV-treated (photo functionalized) and non-treated dental implants surface coated with Calcium phosphate using the Resorbable Blast Media (RBM) technique in an animal model. Settings and Design: Evaluative-Animal study design. Materials and Methods: Six titanium dental implants of diameter 3.2 mm and length of 8 mm with Calcium phosphate coated surface using RBM or resorbable blast media technology (Implant Genesis: Genesis Normo Implant system) were placed epicrestally into the proximal femoral condyle of New Zealand white female rabbits such that each animal received two implants. Before implantation, one out of the two dental implants was photo functionalized with intense UV light for 15 minutes. After twelve weeks of healing, the animals were euthanized and the harvested specimens were analyzed using histomorphometric light microscopy to assess two parameters



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ORIGINAL ARTICLE

6

Effectiveness of Platelet-Rich Fibrin with Decalcified Freeze-Dried Bone Allograft Compared to Decalcified Freeze-Dried Bone Allograft Alone in Mandibular Grade-II Furcation Defects: A Quasi-Experimental Study

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