

CURRICULUM VITAE

Dhanya R, Ph.D.

ICMR-DHR Young Scientist

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PROFESSIONAL

- April 2019- April 2022, ICMR-DHR Young Scientist,
Rajiv Gandhi Centre for Biotechnology, Trivandrum, India
- July 2016-April 2019, Post Doctoral Fellow,
Rajiv Gandhi Centre for Biotechnology, Trivandrum, India
- June 2011-March 2016 – PhD Scholar, CSIR-NIIST, Trivandrum

EDUCATION

- Ph.D. Diabetes Biology, CSIR-NIIST, Trivandrum, 2016
- M.Sc. Biotechnology & Biochemistry, MG University, 2009
- B.Sc. Industrial Microbiology & Biochemistry - 2007

ACADEMIC HONOURS/AWARDS

- InSc Research excellence award, 2021
- Best paper award “International conference on New Horizons in Plant science” organised by Kerala University, 2021
- ICMR-DHR Young scientist scheme, 2019
- KBC-KSCSTE Post-Doctoral fellowship, 2016
- Best Poster award “ International symposium on Phytochemistry” organised by Kerala Academy of Science, 2015
- Best Paper award “ National conference on emerging avenues in food technology for better health and safety” organised by TKM Institute of Technology, 2013
- GATE -2013
- KSCSTE PhD Fellowship -2010

- Second Rank in MSc Biotechnology, 2009

PUBLICATIONS

As corresponding author

1. **R Dhanya***, CC Kartha (2021) Quercetin ameliorates oxidative stress-induced pancreatic beta cell toxicity via mTOR-signaling. *Molecular and Cellular Biochemistry*. doi 10.1007/s11010-021-04193-3. (**IF- 3.4**).

As First Author

2. **R. Dhanya**, K.B. Arun, H.P. Syama, P. Nisha, A. Sundaresan, T.R. Santhosh Kumar, P. Jayamurthy (2014) Rutin and quercetin enhance glucose uptake in L6 myotubes under oxidative stress induced by tertiary butyl hydrogen peroxide, *Food Chemistry*. 158. 546–554. doi: 10.1016/j.foodchem.2014.02.151. (**IF – 7.5**) (Competed for the best paper award in Kerala Science congress) (Citation – 45)
3. **R Dhanya**, Das Arya, P Nisha, P Jayamurthy (2017) Quercetin, a lead compound against type 2 diabetes ameliorates glucose uptake via AMPK pathway in skeletal muscle cell line *Front. Pharmacol.* doi: 10.3389/fphar.2017.00336. (**IF – 5.8**) (Citation – 52)
4. **R Dhanya**, P Jayamurthy (2020) In vitro evaluation of antidiabetic potential of Hesperidin and its aglycone Hesperitin under oxidative stress in Skeletal muscle cell line, *Cell Biochemistry and function*. 38(4):419-427 doi: 10.1002/cbf.3478. (**IF -3.7**) (Citation – 4)
5. **R Dhanya**, K B Arun, V M Nisha, H P Syama, P Nisha, P Jayamurthy (2015) Preconditioning of L6 muscle cells with naringin ameliorates oxidative stress and glucose uptake, *Plos one*. 10(7) doi: 10.1371/journal.pone.0132429. (**IF – 3.3**) (Citation – 21)

As Contributing author

6. K.B Arun, Janu chandran, **R Dhanya**, Priya Krishna, P J ayamurthy, P Nisha (2015) A comparative evaluation of Antidiabetic and Antioxidant effect of peel from young and matured potato. *Food Bioscience* 9. 36-46. doi.org/10.1016/j.fbio.2014.10.003. (**IF – 4.2**) (Citation – 46)

7. KB Arun, **R Dhanya**, Janu Chandran, Billu Abraham, Sannya Satyan, P Nisha (2020) A comparative study to elucidate the biological activities of crude extracts from rice bran and wheat bran in cell line models. *J Food Sci Technol.* doi.org/10.1007/s13197-020-04353-1. (IF - 2.7). (Citation – 5)
8. H. P. Syama, A. D. Arya, **R. Dhanya**, P. Nisha, A. Sundaresan, E. Jacob, P. Jayamurthy (2017) Quantification of phenolics in *Syzygium cumini* seed and their modulatory role on tertiary butyl-hydrogen peroxide-induced oxidative stress in H9c2 cell lines and key enzymes in cardioprotection, *J Food Sci Technol.* 54.7 doi:10.1007/s13197-017-2651-3. (IF- 2.7) (Citation – 13)
9. H P Syama, S Asha, **R Dhanya**, P Nisha, Syed G Dastagar and P Jayamurthy (2014) Evaluation of underutilized vegetable leaves as a potent source of dietary antioxidant and antimicrobial agent, *International Journal of Food and Nutritional Sciences.* 3. 257-264. (IF-1.1)
10. Hari Priya Syama, Karthika Bahulayan Arun, George Sinumol, **Rajendran Dhanya**, Sasidharan Suseela Anusree, P. Nisha, Lankalapalli Ravi Shankar, Andikanan Sundaresan, Purushothaman Jayamurthy (2018) *Syzygium cumini* seed exhibits antidiabetic potential via multiple pathways involving inhibition of α -glucosidase, DPP-IV, glycation, and ameliorating glucose uptake in L6 cell lines, *J Food Process Preserv.* 2018;42:e13464.doi.org/10.1111/jfpp.13464. (IF -2.1) (Citation – 45)

REVIEW

Dhanya R (2021). Quercetin for the management of type 2 diabetes and its complications, an insight into multitarget therapy. *Biomedicine & Pharmacotherapy=Biomedecine & pharmacotherapie*, 146,112560. Advance online publication. <https://doi.org/10.1016/j.biopha.2021.112560>

BOOK CHAPTER

Role of citrus flavonoids in the management of diabetes and its complications. *Recent Advancements and Research in Biological Sciences.* ISBN: 978-81-952529-1-6. Volume 1, Edition-1, page 105-119, May-2021.

REVIEWER OF JOURNALS

- Journal of Molecular and Cellular Medicine
- BIOCELL
- Journal of Anti-Inflammatory & Anti-Allergy Agents in Medicinal Chemistry
- International Journal of Basic and applied sciences
- Journal of Pharmaceutical research International

NEWS LETTERS

‘More to heart disease than modern diet’ International academy of cardiovascular science, vol.1, 2, July 2017

‘Eye to cardiovascular Diseases’ International academy of Cardiovascular science, vol.1, 1, March 2016

CONFERENCE PAPERS AND POSTERS

1. Naringenin stimulates 2-NBDG uptake via upregulating GLUT4 in Skeletal muscle cells under oxidative stress. International conference on New Horizons in Plant science organised by Kerala University, 2021. **(Best paper Award)**.
2. Quercetin ameliorates oxidative stress-induced pancreatic beta cell toxicity via mTOR-signaling. International conference on cardiovascular diseases organised by International Academy of cardiovascular sciences. Madurai Kamaraj University, 2018. (Poster Presentation).
3. In vitro evaluation of antidiabetic potential of Hesperidin and its aglycone Hesperitin under oxidative stress in Skeletal muscle cell line. International symposium on Phytochemicals, Trivandrum, 2015. **(Best Poster Award)**
4. Rutin and quercetin enhance glucose uptake in L6 myotubes under oxidative stress induced by tertiary butyl hydrogen peroxide. 27th Kerala science congress, Alappuzha. Kerala, 2015. **(Competed for Best paper award)**
5. Flavonoids enhance glucose uptake in L6 myotubes under oxidative stress induced by tertiary butyl hydrogen peroxide. National conference on emerging avenues in Food technology for better health and safety. Thangal Kunju Musaliar Institute of Technology, Kollam, 2014. **(Best Paper Award)**.

6. Naringin stimulates glucose uptake in L6 myotubes under oxidative stress induced by tertiary butyl hydrogen peroxide. International Conference on Bioactive Phytochemicals and Therapeutics (ICBPT-2013), Annamalai University, Tamil Nadu, 2013. (Oral presentation)

SERVED AS A RESOURCE PERSON

- Workshop on "**Techniques in Cardiovascular Biology**" Organised by The Academy of Cardiovascular Sciences (IACS-India Section) in association with Rajiv Gandhi Centre for Biotechnology, Trivandrum on 5-6 January 2018.
- Webinar: '**Role of Bioactive compounds in the management of Type 2 Diabetes**' Organised by Department of Biotechnology, SAS SNDP YOGAM College on World Students Day, 17 – 18th October 2020

MEMBER OF SOCIETIES

- Life Member of International Association of Cardiovascular sciences
- Member of Food Scientists and Technologist

EXTRAMURAL FUNDING RECEIVED

No.	Year	Title of Grant	Funding Agency	PI or Co-PI	Amount of Grant
1	2016-2019	Post-Doctoral Fellowship	KSCSTE-KBC	PI	8,98,600
2	2019-2022	ICMR-DHR Young scientist scheme	ICMR	PI	47,13,750

CURRENT RESEARCH

Title : Reprogramming of satellite cells for cardiac repair
Designation : Young Scientist (ICMR-DHR), Principle Investigator
Duration : April 2019 – April 2022
Mentor : Dr Rakesh Laishram, Scientist E-II & Swarnajayanthi Fellow
Institute : Cardiovascular Disease Biology Division
 Rajiv Gandhi Centre for Biotechnology (RGCB)
Description :

Skeletal muscle has a remarkable ability to regenerate after injury by a highly orchestrated degeneration at the tissue, cellular, and molecular levels. It greatly relies on the dynamic interplay between satellite cells and their environment. A recent report describing the successful transdifferentiation of somatic cells to a cardiac fate invitro has raised the possibility that this process might eventually be used for cell-based cardiac therapy. These myocytes possess similar characteristics to the endogenous cardiomyocytes such as cardiac gene expression, sarcomere structure, and electrophysiological features. We hypothesized that a brief reactivation of programming factors in satellite cells by different inductive signals can induce pluripotency. Further, overexpression of the master regulatory transcription factors which control the gene networks can convert it into cardiomyocytes like cells. The resulting new cell type can then be used for patient-specific disease modelling, drug screening, or regenerative medicine.

PROJECTS UNDERTAKEN

Project 1

Title : Effect of quercetin on pancreatic beta cell function and its regeneration
Designation : Post-Doctoral Fellow, Principle investigator
Duration : July 2016 – April 2019
Guide : Prof. CC Kartha, Honorary Distinguished Professor
Institute : Cardiovascular Disease Biology
Rajiv Gandhi Centre for Biotechnology (RGCB)
Description :
Pancreatic β cells which synthesize and secrete insulin are prone to oxidative stress induced damage because of low cellular antioxidant enzymes. To delineate the effects of quercetin on pancreatic β cells we evaluated the protective effect of quercetin on TC6 insulinoma cells subjected to oxidative stress induced by tert-butylhydrogen-peroxide (TBHP). Quercetin was found to reduce TBHP induced apoptosis and trigger insulin secretion in response to glucose, in a dose-dependent manner. Quercetin treatment increased mitochondrial biogenesis, caused hypertrophy in pancreatic β cells and activated mTOR signaling with a transient change in mitochondrial membrane potential and AMP/ ATP. Activation of mTOR signaling resulted in enhanced insulin secretion in TC6 cells.
Publication :
R Dhanya*, CC Kartha (2021) Quercetin ameliorates oxidative stress-induced pancreatic beta cell toxicity via mTOR-signaling. Molecular and Cellular Biochemistry. doi 10.1007/s11010-021-04193-3. (As corresponding author)

Project 2

Title : Designing of Biosensors for Medical applications

Designation : Project assistant
Duration : From March 2016 – June 2016
Guide : Dr P Jayamurthy, Senior Scientist
Institute : Agroprocessesing &Technology Divsion, CSIR-NIIST

Project 3:

Title : Mechanistic role of citrus flavonoids & their glycoconjugates in the management of Diabetes and its associated oxidative stress

Designation : PhD Scholar

Duration : June 2011- March 2016

Guide : Dr P Jayamurthy, Senior Scientist

Institute : Agroprocessesing &Technology Divsion, CSIR-NIIST

Description: :

Targeting therapy to specific macromolecules, tissues and organs of diabetics by specific antioxidants could become a relevant adjuvant pharmacotherapy with improved glycaemic control, protein glycation and management of oxidative stress for the treatment or prevention of progression of micro and macrovascular diabetic complications. Therefore, supplementation with antioxidants as a promising complementary treatment can undoubtedly exert beneficial effects in diabetes. The study provide significant evidence for Quercetin, Rutin & Naringin to be considered as a dietary supplement for the management of Type 2 Diabetes and to suppress oxidative stress mediated damage in diabetic pathophysiology

Awards/Honours :

- InSc Research excellence award, 2021
- Best paper award “International conference on New Horizons in Plant science” organised by Kerala University, 2021
- Best Poster award “International symposium on Phytochemistry” organised by Kerala Academy of Science, 2015
- Best Paper award “National conference on emerging avenues in food Technology for better health and safety” organised by TKM Institute of Technology, 2013

Publications :

- **R. Dhanya**, K.B. Arun, H.P. Syama, P. Nisha, A. Sundaresan, T.R. Santhosh Kumar, P. Jayamurthy (2014) Rutin and quercetin enhance glucose uptake in L6 myotubes under oxidative stress induced by tertiary butyl hydrogen peroxide, Food Chemistry. 158. 546–554. doi: 10.1016/j.foodchem.2014.02.151. (**IF – 7.5**) (Competed for the best paper award in Kerala Science congress) (Citation – 45)
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- **R Dhanya**, P Jayamurthy (2020) In vitro evaluation of antidiabetic potential of Hesperidin and its aglycone Hesperitin under oxidative stress in Skeletal muscle cell line, Cell Biochemistry and function. 38(4):419-427 doi: 10.1002/cbf.3478. (**IF -3.7**) (Citation – 4)

- **R Dhanya**, K B Arun, V M Nisha, H P Syama, P Nisha, P Jayamurthy (2015) Preconditioning of L6 muscle cells with naringin ameliorates oxidative stress and glucose uptake, Plos one. 10(7) doi: 10.1371/journal.pone.0132429. (IF – 3.3) (Citation – 21)

Project 4:

Title : Role of jasmonic acid in defense response of Zingiber zerumbet against the necrotrophic pathogen *Pythium aphanidermatum*

Duration : 3 Months

Guide : Dr George Thomas, Scientist G

Institute : Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram

Description :
Gene expression analysis of allene oxide synthase and allene oxide cyclase by quantitative real time pcr

Project 5:

Title : **Effect of weedicides 2-4-D and glyphosate on *Trichoderma* and *Pseudomonas fluorescence***

Duration : 1 Month

Guide : Dr Shivaprasad, Scientist and Head Department of Microbiology

Institute : College of Agriculture Vellayani, Thiruvananthapuram

Description :
Adverse effects of the weedicides 2-4-D and Glyphosphate on the growth of *Trichoderma* and *Pseudomonas fluorescence*

TECHNICAL SKILLS

Proficient in

RNA isolation, DNA isolation, Polymer Chain Reaction (PCR), Real Time PCR, SDS Page, Confocal Microscopy, Cell Culture Techniques, Flow Cytometry, HPLC, Gene Sequencing, Western Blotting, Microbial Techniques.

OTHER SERVICE ROLES UNDERTAKEN

- Being a member of International Academy of Cardiovascular Disease Biology I was involved in various social awareness programmes organized by The Academy of Cardiovascular Sciences (IACS-India Section) to promote health awareness in School and college students in Kerala.
- Published two articles in the news letters of The Academy of Cardiovascular Sciences (IACS-India Section) to bring awareness among the general public on cardiac health, Food habits and the complications associated with sedentary life style.
- Got an opportunity on 17 – 18 th October to deliver a talk on the ‘Role of Bioactive compounds in the management of Type 2 Diabetes’ Organised by Department of Biotechnology, SAS SNDP YOGAM College on World Students Day in remembrance of Former president Dr. A.P.J Abdul Kalam, to inspire the young generations into science

REFERENCES

- ❖ **Prof. C C Kartha MD, FRCP (London), FAMS, FASc, FNASc, FIACS**
Former Distinguished Scientist
Cardiovascular Disease Biology
Rajiv Gandhi Centre for Biotechnology
- ❖ **Dr. K. G Raghu**
HOD & Principle Scientist
Agroprocessesing & Technology Division
CSIR-NIIST
- ❖ **Dr. Rakesh Laishram**
Scientist EII & Swarnajayanthi Fellow
Cardiovascular Disease Biology Division
Rajiv Gandhi Centre for Biotechnology
- ❖ **Dr .P. Jayamurthy**
Senior Scientist
Agroprocessesing & Technology Division
CSIR-NIIST

Declaration

I hereby declare that all the above furnished details are true to my knowledge.



Dhanya R.