

Dr. Perumal Madan Kumar
Senior Scientist
Department of Biochemistry,
CSIR- Central Food Technological Research Institute,
Mysuru - 570 020.
E-mail: madanperumal@cftri.res.in

Education

2014	Doctor of Philosophy in Biochemistry - University of Madras, India.
2008	Master of Philosophy in Biochemistry - University of Madras, India.
2007	Master of Science in Biochemistry - Thiruvalluvar University, India.
2005	Bachelor of Science in Biochemistry - University of Madras, India.

Research training

❖ **Post-Doctoral Research** (October 2014- May 2017)

Mentor(s): Prof. Mike Brown & Prof. Joe Goldstein, Regental Professors, Department of Molecular Genetics, UT Southwestern Medical Centre, Dallas, Texas. USA.

❖ **Senior Research Fellow** (August 2010 to July 2012)

Mentor: Dr. S. Niranjali Devaraj, Professor and Head (Rtd.), Department of Biochemistry, University of Madras, Guindy Campus, Chennai.

❖ **Doctoral Research (Ph.D)** (January 2009 to February 2014)

Mentor: Dr. S. Niranjali Devaraj, Professor and Head (Rtd.), Department of Biochemistry, University of Madras, Guindy Campus, Chennai.

Faculty Academic Appointments

17/01/2022 - Present	Senior Scientist, Department of Biochemistry, CSIR-CFTRI.
03/2018 - Present	Assistant Professor (AcSIR) in the Faculty of Biological Sciences, Department of Biochemistry, CSIR-CFTRI
17/01/2018 - 16/01/2022	Scientist, Department of Biochemistry, CSIR-CFTRI.

Awards, Certificates and Honors

2018	Recognized by AcSIR as an Assistant Professor of the Academy in the Faculty of Biological Sciences.
2014	Postdoctoral Research Fellowship in Drs. Brown/Goldstein laboratory, UT Southwestern Medical Center, Dallas, TX, USA.
2014	Research Associate in a DBT funded project in University of Madras, Chennai during 2014 (not accepted).
2012	Travel Grant Award from Christian Medical College (CMC), Vellore for presenting a poster in the "Tenth CMC Winter symposium".
2010	Senior Research Scholarship (Science) by Lady Tata Memorial Trust, Mumbai, INDIA.
2007	Proficiency Awards for studies in M.Sc Biochemistry.
2005	Prof. S. Govindasamy Cash Prize Award for securing first mark in Biochemistry in B.Sc University Examinations.

Laboratory profile

Research areas of interest

1. Stellate cell biology - NAFLD
2. Sterol regulatory element-binding proteins in human diseases
3. Ayurceuticals and Functional formulations as dietary intervention

Ongoing R&D Projects:

GAP648	PI	Targeting mitochondrial fission with dietary molecules inhibits hepatic stellate cell activation and progression of non-alcoholic fatty liver disease: Pre-clinical & safety validation
GAP637	PI	Decoding the role of the transcription factor, Sterol Regulatory Element Binding Protein during hepatic stellate cell activation
GAP606	PI	Adipocyte derived extracellular vesicles activate hepatic stellate cells mediated by SREBP cleavage-activating protein
GAP631	Co-PI	A greener processed ayurvedic anti-cancer formulation for liver cancer management
GAP633	Member	Post-biotics fermentate formulation for the management of diabetes, hyperlipidemia and gut health
CLP0017	Member	Validation of health beneficial effects of Coconut oil and virgin coconut oil using <i>in vivo</i> and <i>in vitro</i> and clinical trials

Completed R&D Projects:

MLP277	PI	SREBP inhibitors as novel therapeutics for non-alcoholic fatty liver disease: Insights on CRISPR-Cas9 inhibition of SREBPs targeting activated hepatic stellate cells
MLP270	PI	A cleaner processed ayurvedic food formulation and assessment for immunomodulatory effect
MLP246	Co-PI	Development and evaluation of functional foods for Phenylketonurics and gastritis patients

Number of Ph.D students (ongoing)	4
Number of Project Junior Research Fellows (ongoing)	3
Number of Project Dissertation students (ongoing)	1
Number of Post-doc (completed)	2
Number of Project Associates (completed)	2
Number of Project Dissertation students (completed)	18

Recent Publications from CFTRI

Research – SCI Journals

1. Dasgupta D, Ahuja V, Singh R, More S, Mudliar S, **Kumar M**. Food-grade xylitol production from corncob biomass with acute oral toxicity studies. *World J Microbiol Biotechnol.* 2023 Feb 17;39(4):102. doi: 10.1007/s11274-023-03542-2.
2. Shilpa S, Shwetha HJ, **Perumal MK**, Ambedkar R, Hanumanthappa M, Baskaran V, Lakshminarayana R. Turmeric, red pepper, and black pepper affect carotenoids solubilized micelles properties and bioaccessibility: Capsaicin/piperine improves and

- curcumin inhibits carotenoids uptake and transport in Caco-2 cells. *J Food Sci.* 2021 Nov;86(11):4877-4891. doi: 10.1111/1750-3841.15926.
3. Om P, Gopinath MS, **Madan Kumar P**, Muthu Kumar SP, Kudachikar VB. Ethanolic extract of *Pyrus pashia* buch ham ex. D. Don (Kainth): A bioaccessible source of polyphenols with anti-inflammatory activity in vitro and in vivo. *J Ethnopharmacol.* 2022 Jan 10;282:114628. doi: 10.1016/j.jep.2021.114628.
 4. Murugesan S, Kottekad S, Crasta I, Sreevathsan S, Usharani D, **Perumal MK**, Mudliar SN. Targeting COVID-19 (SARS-CoV-2) main protease through active phytochemicals of ayurvedic medicinal plants - *Emblica officinalis* (Amla), *Phyllanthus niruri* Linn. (Bhumi Amla) and *Tinospora cordifolia* (Giloy) - A molecular docking and simulation study. *Comput Biol Med.* 2021 Sep;136:104683. doi: 10.1016/j.combiomed.2021.104683.
 5. Janani R, Anitha RE, **Perumal MK**, Divya P, Baskaran V. Astaxanthin mediated regulation of VEGF through HIF1 α and XBP1 signaling pathway: An insight from ARPE-19 cell and streptozotocin mediated diabetic rat model. *Exp Eye Res.* 2021 May;206:108555. doi: 10.1016/j.exer.2021.108555.

Reviews

1. Venkatesh VP, Kannan A, **Perumal MK***. Role of adipocyte-derived extracellular vesicles during the progression of liver inflammation to hepatocellular carcinoma. *J Cell Physiol.* 2023 Mar 24. doi: 10.1002/jcp.31008.
2. Vijayan N, **Perumal MK***. A critical review on anti-fibrotic phytochemicals targeting activated hepatic stellate cells. *J Food Biochem.* 2022 Oct 9:e14438. doi: 10.1111/jfbc.14438.
3. Gandhi GR, Jothi G, Mohana T, Vasconcelos ABS, Montalvão MM, Hariharan G, Sridharan G, **Kumar PM**, Gurgel RQ, Li HB, Zhang J, Gan RY. Anti-inflammatory natural products as potential therapeutic agents of rheumatoid arthritis: A systematic review. *Phytomedicine.* 2021 Dec;93:153766. doi: 10.1016/j.phymed.2021.153766.
4. Rajasekar J, **Perumal MK**, Vallikannan B. A critical review on anti-angiogenic property of phytochemicals. *J Nutr Biochem.* 2019 Sep;71:1-15. doi: 10.1016/j.jnutbio.2019.04.006.

Invited Book chapters

1. **Madan Kumar P**, Janani R, Priya S, Naveen J, Baskaran V. (2022). Pharmaceutical Applications of Major Marine Nutraceuticals - Astaxanthin, Fucoxanthin, Ulvan, and Polyphenols. In: Kim, S.-K. (Ed.) *Marine Biochemistry: Isolations and Techniques* (1st ed.). CRC Press. <https://doi.org/10.1201/9781003303909>
2. Annapoorna BR, Vasudevan S, Sindhu K, Vani V, Nivya V, Venkatesh VP, **Madan Kumar P*** (2022). Hepatoprotective Marine Phytochemicals. In: Kim, S.-K. (Ed.) *Marine Biochemistry: Isolations and Techniques* (1st ed.). CRC Press. <https://doi.org/10.1201/9781003303909>
3. Vijayan N, Venkatesh VP, Vijay V, Kannan A, Vallikannan B, **Perumal MK*** (2022). A CRISPR-Cas9-Based Therapeutics in Oxidative Stress-Induced Cancer. In: Chakraborti, S. (eds) *Handbook of Oxidative Stress in Cancer: Therapeutic Aspects*. Springer, Singapore. https://doi.org/10.1007/978-981-16-1247-3_148-1
4. Jayapala N, **Perumal MK**, Baskaran R, Vallikannan B. (2022). Pharmacological Importance of Bioactive Molecules of Seaweeds. In: Ranga Rao, A., Ravishankar, G.A. (eds) *Sustainable Global Resources of Seaweeds Volume 2*. Springer, Cham. https://doi.org/10.1007/978-3-030-92174-3_32
5. Perumal NK, Vijayan N, **Perumal MK**, Halagowder D, Sivasithamparam ND. (2022). Small Molecule Inhibitors That Target Signal Transduction Pathways Involved

- In Oxidative Stress-Induced Cancer. In: Chakraborti, S. (eds) Handbook of Oxidative Stress in Cancer: Therapeutic Aspects. Springer, Singapore. https://doi.org/10.1007/978-981-16-1247-3_36-1
6. Vijay V, Vijayan N, Venkatesh VP, Vallikannan B, **Perumal MK*** (2022). Proapoptotic Effects of Dietary Flavonoids In Oxidative Stress-Induced Cancer. In: Chakraborti, S. (eds) Handbook of Oxidative Stress in Cancer: Therapeutic Aspects. Springer, Singapore. https://doi.org/10.1007/978-981-16-1247-3_151-1
 7. Venkatesh VP, Vani V, Nivya V, Baskaran V, **Madan Kumar P*** (2021). Chapter-2: Bioactives of *Lactuca sativa*: Nutritional and Clinical importance. Editor: Lowell T. Duncan, In: 'Advances in Health and Disease'. Nova Science Publishers, Inc. Volume 33; Pages 43-64.
 8. Naveen J, **Madan Kumar P**, Revathy B and Baskaran V (2021). Chapter-4: Nutritional and anticancer effects of carotenoids from *Lactuca sativa*. Editor: Lowell T. Duncan, In: 'Advances in Health and Disease'. Nova Science Publishers, Inc. Volume 33; Pages 95-117.
 9. Vani V, Venkatesh VP, Nivya V, Baskaran V, **Madan Kumar P*** (2021). Chapter-8: Nutritional and anticancer effects of carotenoids from *Lactuca sativa*. Editor: Lowell T. Duncan, In: 'Advances in Health and Disease'. Nova Science Publishers, Inc. Volume 33; Pages 177-194.
 10. Venkatesh VP, Nivya V, Vani V, Baskaran V, **Madan Kumar P*** (2021). Functional Foods for the Management of Non-Alcoholic Fatty Liver Disease. Editor: Arshad MS, Ahmad MH. In: Functional Foods - Phytochemicals and Health Promoting Potential. London: IntechOpen; doi: 10.5772/intechopen.96317
 11. Venkatesh VP, Nivya V, Vani V, Baskaran V, **Madan Kumar P*** (2021). Chapter-3: Antiviral activity of medicinal plants: Current understanding, prospects and challenges. Editor: Azamal Husen, In: 'Traditional Herbal Therapy for the Human Immune System'. CRC Press.
 12. Naveen J, **Madan Kumar P**, Janani R, Baskaran V (2021). Chapter-15: Plant molecules to treat eye mitochondria. Editor: Marcos Roberto de Oliveira, In: Mitochondrial Physiology and Vegetal Molecules, Academic Press; Pages 339-356.
 13. **Madan Kumar P**, Naveen J, Janani R, Baskaran V (2021). Safety Assessment and Pharmaceutical effects of Astaxanthin: An Overview. 'Global Perspectives on Astaxanthin: From Industrial Production to Food, Health, and Pharmaceutical Applications'. Elsevier; Pages 569-591.
 14. Naveen J, **Madan Kumar P**, Baskaran V (2019). Biological activities and safety aspects of Fucoxanthin. In: 'Handbook of Algal Technologies and Phytochemicals: Volume I Food, Health and Nutraceutical Applications', CRC Press, Pages 245-257.

**Corresponding author*

Invited talks at scientific meetings – 21

Other Responsibilities

- ❖ Member - PhD Doctoral Committee at JSS Medical College (2020 – present)
- ❖ Member - Project Fellow Selection Committee at CFTRI (2020 – present)
- ❖ Member of Advisory committee & Examiner - Diploma Course in Food Safety and Management (SSASC, Kanchipuram) (2019 – present)
- ❖ Convener - EMS-ISO 14001:2015 (2019 – present)
- ❖ Member - QMS-ISO 9001:2008 (2019 – present)
- ❖ Member - AcSIR Doctoral Committee at CFTRI (2019 – present)
- ❖ Member - Swachada Pakhwada - May 2018

OPPORTUNITIES

- ❖ M.Sc/B.Tech/M.Tech students for project dissertation research
- ❖ Ph.D submitted/awarded candidates for applying ICMR/DBT/CSIR Postdoctoral Fellowships

For more details write to madanperumal@cftri.res.in