Curriculum Vitae

Dr. A. HARI KRISHNAN
497, 6th Cross Street,
Sathiyanagar, Kangeyanallur,
Gandhinagar,Vellore – 632 006, Tamilnadu, India
Tel: +91-9245857684
E-mail: harich4@gmail.com

Career Objective:

To continue career in synthetic & biomedically important research area, on the basis of accrued knowledge and expertise in organic synthesis, carbohydrate chemistry, natural products, biochemical and biological studies.

Research Expertise:

- Synthetic organic chemistry
- Natural product chemistry
- Carbohydrate chemistry
- Medicinal chemistry
- Nanomaterials

Research Publications

1. Eco-friendly synthesis of zinc oxide nanoparticles (ZnOnps) from *Piper betel* leaf extract: spectral characterization and its application on plant growth parameters in maize, fenugreek and red gram, **A Harikrishnan**, B Ramalingam, A Nadeem, Balajee Ramachandran, Vijay Kumar Veena and Saravanan Muthupandian, *Materials Technology*,2024, 39, 2298547
2. Effectiveness of Rhenium(I)-diselenoether Low Doses in a Triple-negative Breast Cancer Chicken Embryo Model, P Collery, D Desmaële, **Harikrishnan. A**, V Veena *Anti Cancer Research*, 2024, 44 (3), 941.
3. Anti-breast cancer activity of bioactive metabolites from Andrographis paniculata through inhibition of PI3K activity in triple negative breast cancer (MDA-MB-231) cells, **Harikrishnan. A**, VijayKumar Veena, Roshini Kancharla, Sakshi Chavan, Jothi Ramalingam Rajabathar, Hamad Al-Lohedan, Saravanan Pandiaraj, Ponmurugan Karuppiah, Selvaraj Arokiyaraj, *Journal of Molecular Structure*, 2023, 1294, 136506,
4. A Variant Gel-Combustion Approach to Impregnate Nanostructured MgO Coating on Cotton Fibers for Antibacterial Textile Applications, **Harikrishnan. A**, Maheswari Purushothaman, Devarajan Alagarasan, Annamraju Kasi Viswanath, Saravanan Pandiaraj, Jothi Ramalingam Rajabathar, Muthusamy Karnan, *Fibers and Polymers*, 2023, 24, 3927-3936.
5. Remarkable Effects of a Rhenium (I)-diselenoether Drug on the Production of Cathepsins B and S by Macrophages and their Polarizations, P Collery, D Desmaële, **Harikrishnan. A**, V Veena, *Current Pharmaceutical Design*, 2023.
6. Therapeutic exploration of polyherbal formulation against letrozole induced PCOS rats: A mechanistic approach Arul Balasubramanian , Sudhakar Pachiappan, Surendiran Mohan , **Harikrishnan. A**, Indira Karuppasamy, Kothai Ramalingam, *Heliyon* 2023, 9 , e1548.
7. Preparation, enhancement of permeability, and anti-biofouling properties of PEES/nano-silver/PVP mixed-matrix membrane M Soundarrajan, Khuloud A Alibrahim, J Krishnamurthi, P Maheswari, **Harikrishnan. A**, Abdullah Alodhayb, MR Muthumareeswaran, Materials Research Express, 2023

8. Enhancement of antifouling properties, metal ions and protein separation of poly (ether-ether-sulfone) ultrafiltration membranes by incorporation of poly ethylene glycol and n-ZnO M Purushothaman**, A Harikrishnan**, PS Kumar, J George, G Rangasamy, Environmental Research, 2022, 216, 114696. ***Impact factor : 8.47***

9. Nanomaterials Based Monitoring of Food-Borne and Water-Borne Pathogens Hanuman Singh Jatav,Vishnu D. Rajput, Tatiana Minkina, **Harikrishnan. A**, ***J. Nanomaterial, 2022,*** 204 , 1-15***. Impact factor : 3.79***

10. Impact of nano-ZnO consolidated poly (ether ether sulfone) nano filtration membrane for evacuation of hazardous metal particles P Maheswari, DR Mohan, **Harikrishnan. A** R Sivaramakrishnan, ***Chemosphere 2022,*** 297, 134024 ***Impact factor : 8.49***

11. Inhibition of biofilm formation in Staphylococcus aureus by novel antibacterial compounds from Lactobacillus plantarum SJ33, D Lakshmanan, **A Harikrishnan**, D Lakshmanan, K Jeevaratnam ***Archives of Microbiology, 2022. Impact factor : 2.53***

12. Design of new improved curcumin derivatives to multi targets of cancer and inflammation, **Harikrishnan A**, Lakshmi B, Sunali Khanna, ***Cur. Drug Targets***, ***2021***.22, 573-589. ***Impact factor : 3.42***

13. In vitro and in silico anti-leukemic activity of 2-amino-6-nitro-4-(4-oxo-2-thioxothiazolidin-5-yl)-4H-chromene-3-carbonitrile (ANC) through inhibition of anti-apoptotic Bcl-2 **Harikrishnan A**, Vijay Kuma, Veena, Ahana Roy Choudhury ***J Biomol Struct Dyn*.2021** 1 (1), 1-9. ***Impact factor : 5.23***

14. Predictive medicinal metabolites from Momordica dioica against comorbidity related proteins of SARS-CoV-2 infections C Sakshi, **A Harikrishnan**, S Jayaraman, AR Choudhury, V Veena, ***J Biomol Struct Dyn***, **2021, 1-14.** ***Impact factor : 5.23***

15. High-Performance Electrochemical Sensor Based on Yttrium Sulfide Nanoparticles Decorated Carbon Nitride Heterostructure for Highly Sensitive Detection of Antimicrobial Drug in Biological Samples, K Gokulkumar, AK Sundramoorthy, SF Wan, **A Harikrishnan *J. Electrochem. Soc,* 2021. 168, 077516.** ***Impact factor : 4.34***

16. Effects of rhenium(I)-diselenoether and of its diselenide ligand on the production of cathepsins B and S by MDA-MB231 breast malignant cells." Veena V, **Harikrishnan** A, Lakshmi B, Sunali Khanna, Didier Desmaele, Collery P.R. ***Anticancer Research* 2021*, (Just Accepted). Impact factor : 2.47***

17. Characterization and evaluation of antibacterial efficacy of a novel antibiotic-type compound from a probiotic strain Lactobacillus plantarum KJB23 against food-borne pathogens, S Kavitha, **A Harikrishnan**, K Jeevaratnam, ***LWT – Food Science and Technology* 2020**,118, 108759. ***Impact factor : 6.06***

18. Atranorin, an antimicrobial metabolite from lichen *Parmotrema rampoddense* exhibited in vitro anti-breast cancer activity through interaction with Akt activity **Harikrishnan A,** Lakshmi B, Shanmugavalli R, Teres S, Tinabaye A,Prashantha C N, Shah T, Oshin K, TogamR, Nandi S, ***J Biomol Struct Dyn* 2020**, 40, 1915-1920. ***Impact factor : 5.23***

19. A New Model Applied for Evaluating a Rhenium-diselenium Drug: Breast Cancer Cells Stimulated by Cytokines Induced from Polynuclear Cells by LPS. Veena V,**Harikrishnan A**, Lakshmi B, Sunali Khanna, Didier Desmaele, Collery P.R ***Anticancer Research. 2020,*** 4 ,1914. ***Impact factor : 2.47***

20. Potent HCV NS3 Protease Inhibition by a Water-Soluble Phyllanthin Congener, Uma Reddy, Himani Tandon, Manoj K. Pradhan, **Harikrishnan A** Narayanaswamy Srinivasan, Saumitra Das, Narayanaswamy Jayaraman, ***ACS Omega***. ***2020***, *5, 11553.* ***Impact factor : 4.13***

21. "The rhenium(I)-diselenoether anticancer drug targets ROS, TGF-beta1, VEGF-A, and IGF-1 in an in vitro experimental model of triple-negative breast cancers." P. R. Collery;, **Harikrishnan, A.**; D. Desmaele, ***Invest. New. Drugs***, **2019**, 37, 973-983. ***Impact factor : 3.85***

22. "A compound isolated from Alpinia officinarum hance. inhibits swarming motility of Pseudomonas aeruginosa and down-regulates virulence genes D Lakshmanan, **A Harikrishnan**, S Vishnupriya, K Jeevaratnam ***J. App. Microbio***. ***2019, 128,*** 1355**.** ***Impact factor : 4.059***

23. Swarming Inhibitory Potential of Cinnamtannin B1 from Cinnamomum tamala T. Nees and Eberm on Pseudomonas aeruginosa D Lakshmanan, **Harikrishnan**. **A,** S Vishnupriya, K Jeevaratnam, ***ACS Omega***, **2019**, 4, 16994-16998. ***Impact factor : 4.13***

24. Purification and identification of 4-allylbenzene-1,2-diol: an antilisterial and biofilm preventing compound from the leaves of Piper betle L. var Pachaikodi" Kavitha S.; **Harikrishnan, A.;** Jeevaratnam, K. ***Nat. Prod. Research***, **2019**, *33*, 1514-1517. ***Impact factor : 2.86***

25. Therapeutic molecules for fumigating inflammatory tumor environment, **Harikrishnan, A.;** Veena, V. ***Curr. Sign. Trans. Therapy***, **2018**, **13, 129-154.**

26. Controlled, sequential approach to synthesize stereogenic methanes *via in situ* generated reactive intermediates, **Harikrishnan, A.;** Ramachandran G.; Ramanathan, C. R. ***Chemistry Select,*** **2016**, 1, 3022-3027 (One of the top most accessed article in the month of August 2016). ***Impact factor : 2.24***

27. The cooperative effect of Lewis pairs in the Friedel–Crafts hydroxyalkylation reaction: a simple and effective route for the synthesis of (±)-carbinoxamine, **Harikrishnan, A.;** Sanjeevi J.; Ramanathan, C. R. ***Org. Biomol. Chem.*** **2015**, *13*, 3633-3647. ***Impact factor : 3.87***

28. Friedel-Crafts hydroxyalkylation through activation of carbonyl group using AlBr3: An easy access to pyridyl aryl / heteroaryl carbinols, **Harikrishnan, A.**; Selvakumar, J.; Gnanamani, E.; Suman, B.; Ramanathan, C. R. ***New J. Chem.*** **2013**, *37*, 563-567. ***Impact factor : 3.95***

29. Characterization, cytotoxicity, antimicrobial and antioxidant profiling of cell culture mediated synthesized curcumin contained gold nanoparticles (Cur-AuNP) **Harikrishnan A**, V. Veena, ***Applied nanoscience****(Under review)*

30. Investigation on Antibacterial and Antifungal activity of CuO/ZnO Nanocomposites Impregnated Fabrics Devarajan Alagarasan, Surendiran **Harikrishnan A**, **Manuscript to be submitted** *(Under review)*

31. Cancer stem cells (CSCs) targeting natural products – current updates and molecular insights of action, Harikrishnan A, Vijay Kumar Veena **Manuscript submitted** *(Under review)*

32. Bacterial consortium based biofertilizer candidate with pesticide degrading capacity and increasing the soil health **Harikrishnan A**, K Oshin, S Soudharya Rukana Naz, Veena V ***J. Agri. Food Res.*** *(Under review)*..

33. Design, synthesis and structure activity relationship studies of pyridylarylcarbinols, **Harikrishnan, A**.; Ramanathan, C. R, M. Moumita; Sakthivel, N. *Manuscript to be submitted.*

34. Highly substituted methyl derivatives; A potential anticancer molecules **Harikrishnan, A**.; Ramanathan, C. R, M. Moumita; Sakthivel, N. *Manuscript to be submitted.*

35. Syntheses of mono, di, tri and tetra orthogonally free hydroxyl β-D- glucopyranoside from p-methoxybenzyl-β-D- glucopyranoside, **Harikrishnan, A**, N. Jayaraman *Manuscript to be submitted.*

36. Total synthesis of corilagin derivatives and evaluation of their anti-HCV potencies, **Harikrishnan, A**.,Uma Reddy, Saumitra Das, N. Jayaraman. *Manuscript to be submitted.*

Patents granted:

1. Biospectrum Based NPK and Trace Elements Enriched Compost for Plants **A. Harikrishnan,** Ref. No. 449916 Dated On 06.09.2023 Indian Invenstion Patent .

2. Nano-lignocellulosic biocompost production for sustainable agriculture, **Harikrishnan**, **A** Ref. No. 517319 Dated On 29.02.2024 Indian Invenstion Patent

3. Biospectrum Based NPK and Trace Elements Enriched Compost for Plants **A. Harikrishnan,** Ref. No. 2021102872 Dated On 16.03.22.

4. Pytomeidiated Curcumin Decorated Gold and Silver Nano Particles for Biomedical Applications **A. Harikrishnan**, Ref. No. 2021103073 Dated On 09.03.22.

Patents Published:

1. Broad spectrum phyto-based molecules, vitamins, and minerals containing adjuvant for viral infections, **Harikrishnan, A et al**, Ref. No.**202041028938** dated: 27-11-2020
2. Phyto-mediated Curcumin decorated gold and silver nanopaticles for biomedical applications **Harikrishnan**, **A *et al,*** Ref. No.**202041052826A** dated: 04.12.2020
3. Phyto-based Antimicrobial organic seed coating for controlling the seed borane microbes in organic farming**, Harikrishnan**, **A *et al,* Ref. No. 202141017656** dated: 18.06.2021
4. Phyto-Active incorporated metallic molecules mediated biologically active natural silk fibroin production for biomedical application**, Harikrishnan**, **A *et al,*** Ref. No.**202041032484** dated: 30.07.2021
5. Development of KIT for plant based seed coatings to aid inhibition of seed borane infections for value added crop cultivation, **Harikrishnan**, **A *et al,*** Ref. No.**202041027865** dated: 16.07.2021.
6. Bio products and compost production from areca leaf plate biodegradation, **Harikrishnan**, **A *et al,*** Ref. No.**202041027865** dated: 10.09.2021
7. Anticancer and antiviral medicinal metabolites formulation from cadamba**, Harikrishnan**, **A *et al,*** Ref. No. **202041042463.**
8. Millets, ragi and sprout containing immune-boosting based protein and fiber rich powder and drink, **Harikrishnan**, **A *et al,*** Ref. No. **202141029324**
9. The designed multi-purpose protein and fiber rich immune boost powder for the regular use by different age groups, **Harikrishnan**, **A *et al,*** Ref. No. **202141029361**
10. Phytomediated incorporated lupeol-based molecules in biologically active silk fibroin production for biomedical applications **Harikrishnan**, **A *et al,*** Ref. No. **202241058502**
11. Phytobased ecofriendly seed coatings for control of the seed-borne micro-organisms **Harikrishnan**, **A *et al,*** Ref. No. **202241058517**
12. Phytobased ecofriendly seed coatings for control of the seed-borne micro-organisms **Harikrishnan**, **A *et al,*** Ref. No. **202341008636**

Patents filled:

13. Chewable based bio-stimulant enriched with organic fat soluble vitamins and micro nutrients: A supplement for different age group, Patent submitted, Ref. No. **202041027169**.

14. Pyridyl aryl carbinols: Design, synthesis and identification of promising drug leads, Ramanathan, C. R.; **Harikrishnan, A**.; M. Moumita.; Sakthivel, N

Patent to be submitted:

15. Pyridyl encompassing unsymmetrical triarylmethanes - potential drug for various cancers, Ramanathan, C. R.; **Harikrishnan,A**.; Veena V Sakthivel, N.; M. Moumita.; *Patent to be submitted.*

Book Chapters :

1. Targeting the cancer-specific inflammatory components in cancer therapeutics **Harikrishnan**, **A *et al*,**
2. Mechanistic insight of Rhenium based compounds as anticancer agents, **Harikrishnan, A *et al*,**
3. Commercial Exploitation of Microbial Communal Services to Enrich Plant Microbiome **Harikrishnan, A *et al*,**
4. Molecular Insights of Active Plant-Based Antidiabetic Drug Molecules **Harikrishnan, A *et al*,**
5. Mushrooms: Nutraceuticals and Functional Foods **Velvet Shank (Flammulina velutipes) Harikrishnan, A**
6. Molecular Mechanistic insights of anticancer properties of bioactive molecules from Glycyrrhiza glabra**, Harikrishnan, A *et al*,**
7. Drugs from Microbes: Drug discovery, development and current updates **Harikrishnan, A *et al***

Books :

1. A novel synthesis of Mannich base and its copper complex **Harikrishnan, A *et al*,**
2. AFM & EIS Studies on Polypyrrole and anticorrosive their performance **Harikrishnan, A *et al*,**

Education:

- **Project scientist (MoU) at IIScBangalore (Sep 2023 to Current)**
- **Assistant Professor (Sr.Gr-II) & (Research & Publication Coordinator VMRF (DU), (June 2019- Current)**
  Department of Chemistry, School of arts and science, VMRF, AV-CAMPUS, Chennai.
  Role: Research and Teaching.
- **Post Doctoral Fellow (1st Feb 2018- 31st May 2019) &**
- **Project Associate (2nd Jan-2017 to 31st Jan-2017)**
  Department of Organic Chemistry, Indian Institute of Science, (IISc)-Bangalore
  Title: Syntheses of corilagin, Phyllanthin derivatives for HCV protease inhibition**.**
- **Ph.D Chemistry (Mar.2011-Oct.2017)**
  Pondicherry University, Puducherry, India
  Thesis title: "$AlBr_3$ Mediated C–C and C–Y (Y = S, O) Bond Forming Reactions: Synthesis of Small Molecules for Anti-Cancer Drug Discovery*"*
- **M.Phil. Chemistry (June 2009- Mar.2011)**
  Pondicherry University, Puducherry, India

Thesis title: "C-C bond forming reaction: Addition of π-nucleophiles to pyridine-2-carboxaldehyde through Lewis acid activation" (Percentage of Marks: 82.15%)

- **M.Sc. Chemistry (2007-2009)**
  Thiruvalluvar University, Muthurangam Govt. Arts College, Vellore, India
  Percentage of Marks: 76.95%
- **B.Ed. Chemistry** (2006-2007)
  Madras University, IASE-Saidapet, India
- **B.Sc. Chemistry (2003-2006)**
  Thiruvalluvar University, Muthurangam Govt. Arts College, Vellore, India
  Percentage of Marks: 84.96%
- **HSC (2000-2002)**
  Don Bosco Hr. Sec. School, Gandhinagar, Vellore, India
  Percentage of Marks: 85.08%
- **SSLC** (1999-2000)
  Don Bosco Hr. Sec. School, Gandhinagar, Vellore, India
  Percentage of Marks: 87.20%

Awards and Fellowships

- ✓ Qualified **CSIR-UGC-NET** December 2009 examination (**88th Rank**)
- ✓ Qualified the national level **CSIR-UGC-JRF** June 2010 examination (**316th Rank**).
- ✓ **CSIR-UGC Senior Research Fellowship Award** (2013-2016).
- ✓ **First Rank** in 2009-2010 M.Phil & Ph.D entrance examination conducted by Pondicherry University.
- ✓ **University rank** (10th) in B.Sc (Chemistry) at Thiruvalluvar University.
- ✓ Qualified the **JRF-written** examinationconducted by IGCAR, Kalpakkam, India.
- ✓ M.Sc project and participated in **STIC**-2008, conducted by IGCAR, Kalpakkam, India
- ✓ **Volunteer In-charge of conferences, seminars** (2009-2016) in Department of Chemistry, Pondicherry University, Puducherry.
- ✓ **Organized** conferences, seminars**.**

Presentations in Conferences/ Seminars (Selective)

Poster presentation	**:**	"Target identification of a novel 4H-chromene carbonitrile derivative that inhibits the high BcL-2 expressing leukemic cells" September 19-20, 2019.
Poster Presentation	**:**	Addition of π-nucleophiles to aldehydes through Lewis acid activation Ramanathan. C. R.; **Hari Krishnan**, **A.** CRSI, conducted atPondicherry University**,** India,Dec. 16-17, 2011
Poster presentation	**:**	Pyridyl aryl methanols: A potential anti-cancer drug molecules**,** Ramanathan, C. R.;**Hari Krishnan**, **A. NSRAC,** conducted at Pondicherry University**,** India,Mar. 22-23**,** 2013
Oral Presentation	**:**	"Novel approach towards synthesis of carbinols and ethers: Activation of Carbonyl groups (aldehydes and ketones) by simple Lewis acids-its potential activity against cancer cells" Ramanathan, C. R.; **Hari Krishnan**, **A.** CHEMZEAL, conducted at Pondicherry University, India, 18th Feb. 2014.
Oral Presentation		Dietary Lupeol induced molecular regulatory mechanism of anti-oxidant, anti-inflammatory and anti-breast cancer potential, (Reva University)
Oral Presentation	**:**	Development of viral gene delivery system October 17-18, 2019, Reva University
Oral Presentation	**:**	Lewis pair facilitated Friedel-Crafts hydroxyalkylation reaction: Synthesis of (±)-carbinoxamine and macrocycles, Indo-French centre for promotion of advanced

research conducted at Pondicherry University, India, March 24-28th 2014.

Laboratory Skills

- ✓ Experience in the handling of sensitive reagents, glove box, schlenk line, syntheses of complex organic molecules, multistep synthesis, carbohydrates, Natural products and carryout reaction in inert atmosphere condition.
- ✓ I had supervised 14-postgraduate & assisted other Ph.D students in their research projects.
- ✓ Widespread experience and knowledge in catalysis, material characterization, carbohydrate, mutistep organic synthesis
- ✓ Proficient in handling air, moisture sensitive compounds
- ✓ Expertise in separation, purification and characterization of organic compounds
- ✓ Knowledge on deciphering the reaction pathways by spectral data of the reaction mixtures
- ✓ Experienced in analysis and characterization of molecules using techniques like IR, NMR (^{1}H, ^{13}C, NOE, COSY, HSQC, HMBC, DEPT), Thin-Layer and Column Chromatography.

Instrumentation/Software Skills

- ✓ Expertise in handling FT-IR, NMR (400 MHz), HRMS, HPLC (chiral and preparative), Polarimeter, GC-MS and flash chromatography.
- ✓ Experience in Chemdraw, Scifinder, Reaxys and basic computer handling.

Additional Skills

- ✓ National cadet crops (**NCC**), National service scheme (**NSS**), Participated and won district & state level essay competition, Poetry writing & awarded "**Chenthamilaruvi**" by tamilayya kalvikalagam.

My Achievement and responsibilities:

1. I successfully completed a **Seed Money Project Phase-I (1.80 lacs)**

Seed money project outcomes:

5 Publications with high impact factor

5 Patents Published

2. SAS-Research Coordinator

3. Industry academia Coordinator

4. SAS- Admission - Co-Convenor
5. VMRF-BOS-Member 2019 to 2022 (Science board)
6. ISO & Exam Cell Coordinator (Department level)
7. Received Best Researcher award (Cash Prizes)
8. 85 % Above Results (All Sem)

9. Criteria 3 Incharge
10. Convenor for national level confernces & Organizing member for various internatonalevel confernces
11. Received Best Poster and oral presentation
12. Guide for two PhD research students and Co- Guide (Mahatma Gandhi Medical University Puducherry)

References:

Dr. C. R. Ramanathan
Professor
Department of Chemistry
Pondicherry University
Puducherry 605 014, India
Contact. No: +91-94436-36437
E-mail: crrnath.che@pondiuni.edu.in

Dr. N. Jayaraman
Professor & Chairman
Department of Organic Chemistry
Indian Institute of Science
Bangalore 560 052, India
Contact. No: +91-94484-63637
E-mail: jayaraman@iisc.ac.in

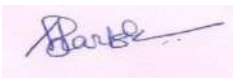
Dr. M. Jeganmohan
Professor
Department of Chemistry
Indian Institute of Technology Madras
Chennai, Tamilnadu-600036, India.
Contact. No: +91-89031-59461
E-mail:mjeganmohan@iitm.ac.in

Dr. M. Bakthadoss
Professor
Department of Chemistry
Pondicherry University
Puducherry 605 014, India
Contact. No: +91-94430-96180
E-mail:bhakthadoss@yahoo.com

Declaration

I hereby declare that the information given above is true to the best of my knowledge and belief.

Date : 26-03-2024
Place : Chennai, Tamilnadu



A. Hari Krishnan