

Curriculum Vitae

Dr. A. PARTHIBAN

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Education

2009-2015 Ph.D. (Synthetic Organic and Medicinal Chemistry), Pondicherry University, Puducherry, 605 014, India.

Thesis Title: Synthesis, characterization and biological activity of 4*H*-chromenes and 1,4-dihydropyridines.

Thesis Supervisor: Prof. H. Surya Prakash Rao, Department of Chemistry, Pondicherry University, Puducherry, 605014. India.

2005-2007 M.Sc, Chemistry, Annamalai University, Chidambaram, 608 002, India.

2002-2005 B.Sc, Chemistry, Arignar Anna Govt. Arts College, Cheyyar, India.

Awards and Achievements

- ✓ Qualified CSIR-NET in Dec 2009 (Council of Scientific and Industrial Research) conducted by Government of India).
- ✓ Qualified GATE-2009 (Graduate Aptitude Test in Engineering) Conducted by Government of India IITs, India.

Post-Doctoral Experience

- Presently working as a Project Scientist in Medicinal Chemistry at National Centre for Sustainable Coastal Management (NCSCM), Anna University Campus, Chennai, Tamil Nadu, India.

Teaching Experience

- Worked as an Assistant Professor in Department of Chemistry, Karpagam Academy of Higher Education (Deemed University), Coimbatore, during the Period of 12-10-2015 to 30-04-2018.

Research Experience

- ❖ Synthesis of highly substituted Hantzsch type 1,4-dihydropyridines and its application towards the synthesis of novel neonicotinoid insecticide analogues.
- ❖ Synthesis and anticancer activity of highly functionalized 4*H*-chromene and its derivatives.

- ❖ Synthesis and antimalarial activity of chloquinoline-4*H*-chromene conjugates.
- ❖ Buchwald coupling, C-H activation and one pot multicomponent reactions.
- ❖ Michael addition and Henry reaction.
- ❖ Synthesis of naturally occurring Curcumin anticancer compounds.
- ❖ Isolation and Characterization of Marine Drugs.

Research Interests

- ❖ Development of new synthetic methodologies
- ❖ Synthesis and biological activity of novel heterocyclic compounds
- ❖ C-H bond functionalization
- ❖ One pot multicomponent reactions
- ❖ Isolation and characterization of bioactive compounds from plant resources
- ❖ Development of Novel drugs from marine resources
- ❖ Isolation and characterization of bioactive marine drugs.

Skills and Accomplishments

- Expertise in multi-gram scale synthesis in organic chemistry.
- Development of new methodologies via transition metal catalyst.
- Expertise in interpretation of IR, UV, Mass, GC-MS, LC-MS and NMR Spectral data.
- Expertise in interpretation of 2D NMR Spectroscopy (HMBC, HSQC, DEPT etc.).
- Expertise in separation of compounds through Flash Column Chromatographic technique.
- Expertise in separation of compounds through High Pressure Liquid Chromatography (HPLC) techniques.

Expertise in handling Instruments

- Bruker NMR (400 MHz) Spectroscopy
- HPLC (High Performance Liquid Chromatography technique).
- Mass Spectrometry [ESI-MS]
- UV-Visible Spectrophotometer
- Bruker FT-IR Spectrometer
- Flash Column Chromatographic techniques
- GC-MS and LC-MS

Technical Skills

- ❖ NMR spectral analysis, TLC, Flash Column chromatography, GC-MS, LC-MS, FT-IR, purification techniques, crystallization, distillation, and HPLC.

List of Publications

1. One-pot Pseudo three component reaction of nitroketene-*N,S*-acetals and aldehydes for synthesis of highly functionalized hexa-substituted 1,4-dihydropyridines. Rao, H. S. P.; **Parthiban, A.** *Org. Bio. Chem.* **2014**, *12*, 6223–6238. (**Highlighted in RSC Blogs**).
2. Design, synthesis, molecular docking and biological evaluation of *N*-methyl-3-nitro-4-(nitromethyl)-4*H*-chromen-2-amine derivatives as potential anticancer agents. **Parthiban, A.**; Muthukumar, J.; Priya, A. M.; Jayachandran, S.; Krishna, R.; Rao, H. S. P. *Med. Chem. Res.* **2014**, *23*, 642–659.
3. Design, synthesis, *in vitro* and *in silico* anticancer activity of 4*H*-chromenes with C4-active methine groups. **Parthiban, A.**; Kumaravel, M.; Muthukumar, J.; Rukkumani, R.; Krishna, R. Rao, H. S. P. *Med. Chem. Res.* **2015**, *24*, 1226–1240.
4. Synthesis, *in vitro* and *in silico* anti-proliferative activity of 4-aryl-4*H*-chromene derivatives. **Parthiban, A.**; Muthukumar, J.; Kumaravel, M.; Rukkumani, R.; Krishna, R.; Rao, H. S. P. *Med. Chem. Res.* **2016**, *7*, 1308–1315.
5. Synthesis, *in vitro* and *in silico* anti-malarial activity of chloroquinoline-4*H*-chromene conjugates. **A. Parthiban**, J. Muthukumar, Ashan Manhas, Kumkum Srivastava, R. Krishna, H. Surya Prakash Rao. *Bioorg. Med. Chem. Lett.* **2015**, *25*, 4657–4663.
6. An X-ray crystallographic study of *N*-methyl-3-nitro-4-(nitromethyl)-4*H*-chromen-2-amine. Muthukumar, J.; **Parthiban, A.**; Rao, H. S. P.; Krishna, R. *J. Chem. Crystallogr.* **2011**, *41*, 927–934.

Conference/ Seminar Participation

1. March 23-25, 2010, Green Chemistry, International Conference on Green Energy Technology, Pondicherry University, Puducherry, India, A. Pathiban. Participant.
December, 2010, One day symposium on opportunities and challenges in chemistry, Pondicherry University, Puducherry, India, **A. Parthiban**. Participant.
2. February 24-26, 2011, Recent Trends in Organic Synthesis-2011, Bharathidasan University, Tiruchirappalli, India poster presentation. Synthesis and anti-oxidant activity of 4*H*-chromene derivatives. H. Surya Prakash Rao, **A. Parthiban**.
3. January 16-17, 2011, International Year of Chemistry, CRSI 4th Zonal Meeting-2011, Pondicherry University, Puducherry, India poster presentation. Synthesis, crystal structure analysis and biological evaluation of 4*H*-chromene derivatives through *in silico* and *in*

- vitro* studies. **A. Parthiban**, J. Muthukumaran, A. Moushumi Priya, R. Krishna, S. Jayachandran and H. Surya Prakash Rao.
4. March 24-26, 2013, National symposium on recent advances in chemistry-2013, Pondicherry University, puducherry, India poster presentation. Nitroketene *N,S*-acetal chemistry: Diversity oriented synthesis of 1,4-dihydropyridines. H. Surya Prakash Rao, **A. Parthiban**.
 5. Feb 18, 2014, CHEM ZEAL-2014, Pondicherry University, Puducherry, India oral presentation. Synthesis of highly substituted 1,4-dihydropyridines and its application to the synthesis of neonicotinoid insecticide analogue. H. Surya Prakash Rao, **A. Parthiban**.

Personal Details

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References

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Summary of the Ph.D. research work

We have described synthesis, characterization *in vitro* and *in silico* bioactivity of functionalized oxygen and nitrogen heterocyclic compounds like 4-nitromethyl-4*H*-chromenes, active methine substituted 4*H*-chromenes, 4-aryl-4*H*-chromenes and chloroquinoline-4*H*-chromene conjugates. In addition, we have developed a facile and convenient method for synthesis of polysubstituted 1,4-dihydropyridines and its application towards the synthesis of neonicotinoid insecticide analogues.

The thesis, which incorporates above work is organized in two chapters, namely (1) synthesis, structural characterization and biological evaluation of C (4) substituted 4*H*-chromenes and (2) synthesis, characterization and biological activity of 1,4-dihydropyridines. The chapter 1 has four sections 1.A-D. In sections 1.A-C, we described synthesis and anti-cancer activity of 4*H*-chromenes and in section D we described the synthesis of chloroquinoline-4*H*-chromene conjugates and their anti-malarial activity. In chapter 2 we presented synthesis, characterization and anti-cancer activity of 1,4-dihydropyridines.

Chapter 1. Synthesis, structural characterization and biological evaluation of C(4) substituted 4H-chromenes

Section 1.A. Design, synthesis, molecular docking and biological evaluation of N-methyl-3-nitro-4-(nitromethyl)-4H-chromen-2-amine derivatives as potential anticancer agents.

Parthiban, A.; Muthukumar, J.; Priya, A. M.; Jayachandran, S.; Krishna, R.; Rao, H. S. P. *Med. Chem. Res.* **2014**, 23, 642–659.

Section 1.B. Design, synthesis, *in vitro* and *in silico* anticancer activity of 4H-chromenes with C4-active methine groups.

Parthiban, A.; Kumaravel, M.; Muthukumar, J.; Rukkumani, R.; Krishna, R. Rao, H. S. P. *Med. Chem. Res.* **2015**, 24, 1226–1240

Section 1.C. Synthesis, *in vitro* and *in silico* anti-proliferative activity of 4-aryl-4H-chromenes.

Parthiban, A.; Muthukumar, J.; Kumaravel. M.; Rukkumani, R.; Krishna, R.;; Rao, H. S. P. *Med. Chem. Res.* **2016**, 7, 1308–1315.

Section 1.D. Synthesis, *in vitro* and *in silico* antimalarial activity of chloroquinoline-4H-chromene conjugates.

A. Parthiban, J. Muthukumar, Ashan Manhas , Kumkum Srivastava, R. Krishna, H. Surya Prakash Rao. *Bioorg. Med. Chem. Lett.* **2015**, 25, 4657–4663.

Chapter 2. One-pot pseudo three-component reaction of nitroketene-N,S-acetals and aldehydes for synthesis of highly functionalized hexa-substituted 1,4-dihydropyridines.

Rao, H. S. P.; **Parthiban, A.** *Org. Bio. Chem.* **2014**, 12, 6223–6238.