CURRICULUM VITAE

Satya Karuna Pulakhandam

Senior Scientist

Pharmaffiliates Analytics & Synthetics**.**
Nacharam
Hyderabad 500 076,
Andhra Pradesh, India.
9963690992 (Cell).
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PERSONAL

Female, Married, Born on 27 Feb, 1984 in India.

PROFESSIONAL EXPERIENCE

March 2019- Present: Senior Scientist

Custom Synthesis and Process Research & Development (Medicinal Chemistry)

PHARMAFFILIATES ANALYTICS & SYNTHETICS.

Involves custom synthesis molecules, API's molecules and improved cost effective synthesis of API's related impurity profiles involved in new synthetic route development and optimization of pharmaceutical intermediates.

January 2018- March 2019: Scientist

Custom Synthesis and Process Research & Development (Medicinal Chemistry)

INNOVISION LIFE SCIENCES PVT. LTD.

Involves custom synthesis molecules, process development of API's etc and new/improved cost effective synthesis of API's. Involved in new/infringing synthetic route development and optimization of pharmaceutical intermediates and contract research.

JUNE 2012- December 2017: Senior Research Associate

R&D Division (Medicinal Chemistry and Discovery Research)

GVK-BIO SCIENCES

Works in different areas of synthetic organic chemistry e.g. hetero cyclic chemistry, Parallel Synthesis, Linear, Library Synthesis and transition metal catalyzed coupling reaction.

June 2009 - May 2012: Research Associate

R&D Division
GVK-BIO SCIENCES

JUNE 2007- May 2009: Senior Chemist
R&D Division
GVK-BIO SCIENCES

November 2006- May 2007: Trainee Chemist
R&D Division
GVK-BIO SCIENCES.

EDUCATION

2012 -2018 **Ph.D. (Organic Chemistry)**
Jawaharlal Nehru Technological University Kakinada
Kakinada, East Godavari District
Andhra Pradesh, India-533 003

Thesis Title: "Synthesis and Characterization of 1,4-dihyroquinazoline and quinazoline derivatives"

Research Advisor: Dr. Naresh Kumar Katari, Assistant Professor in Gitam University and Dr. Manda Ravi Prakash Reddy, Scientist-E in C-MET.

A facile synthesis of 1,4-dihydroquinazolines from 2-aminobenzyl amine and carbon disulfide via dithiocarbamate performed at room temperature is reported. Corresponding *S*-alkyl quinazoline derivatives were obtained from 1,4-dihydroquinazolines in one-pot reactions under the palladium reagents after addition of alkyl halides. The versatility of this synthetic protocol has been demonstrated with various halo benzenes and also a novel method for the synthesis of *S*-aryl/heteroaryl-quinazoline has been developed through the cross-coupling of 1,4-dihydroquinazoline with variety of aryl and heteroaryl boronic acids under the assistance of $[Cu(OAc)_2]$ as the catalyst for the formation of carbon-sulfur bonds. This newly developed method demonstrates that the conditions of the traditional copper-catalyzed Chan-Lam reaction can be improved; and optimization reaction involves base, solvent and catalyst. The quinazoline moiety has proven to be a versatile building block for development of variety of pharmaceutical entities. For example, many of the quinazoline show a broad spectrum of chemotherapeutic activities, researchers have already determined many therapeutic activities of quinazoline derivatives, including anti-cancer, anti-inflammation and anti-diabetes. Palladium-catalyzed coupling reaction, which plays a vital role in the pharmaceutical industry, is widely applied in chemical synthesis industry and laboratories as an efficient method for the formation of C-C and C-heteroatom bond.

2004-2006 **M.Sc. (Organic Chemistry),** I Class
Department of Chemistry

Andhra University
Andhra Pradesh
India

2002-2004 **B.Sc. (Chemistry),** I Class
Andhra University
Andhra Pradesh
India.

AREAS OF EXPERTISE

- Heterocyclic Chemistry
- Linear Synthesis
- Parallel Synthesis
- Library Synthesis
- Sterochemistry
- Organo-metallic Chemistry
- Synthesis of New active drug molecules
- Development of New drug molecules
- New methodological work
- Chemical development- Involved in new/infringing synthetic route development and optimization of active pharmaceutical ingredients, pharmaceutical intermediates and contract research.

Work experience in synthetic organic Chemistry

Named Reactions Handle:

- Grignard Reactions, Suzuki coupling, Sand-Mayer Reactions, Mitsunobu reaction, Chan Lam Coupling, Friedal Craft Reactions, Jones oxidation, Buchwald Reactions, Ullaman Reaction, Sonagashira coupling, Stille coupling, Swern oxidation, Strecker Synthesis, Simmons-Smith Reaction, Vilsmeier hack reaction, Clemmensen Reduction, Wolfkisher reaction and Merwin-ponndorf reaction

Reactions Handled:

- Protection and Deprotection of Amines, Aldehydes and Alcohols.
- Oxidations
- Reductions (Catalytic)
- Parr Hydrogenation
- Bromination
- Cyclizations
- Nitrations

Reagents Handled:

- KO*t*-Bu, NaH, KHMDS & Different Oxidizing Reagents
- LAH, $NaBH_4$, Pd/C & Raney Ni
- Na Metal, Zn Powder, DIBALH & Different Reducing Reagents
- $ZnCl_2$, $AlCl_3$, NaN_3, $SnCl_2.2H_2O$.
- *n*-BuLi, LDA, LiHMDS, $LiBH_4$, NaO*t*-Bu &Different Organo Metalic Ligands.

Catalysts Handled:

- Tetrakis, $PdCl_2(dppf)$, $Pd(OAc)_2$, $Pd_(PPh_3)_2Cl_2$

SUMMARY OF EXPERIENCE/QUALIFICATIONS

- I have industrial experience in custom synthesis molecules, intermediates in custom pharmaceutical services, **Pharmaffiliates Analytics & Synthetics**. Expertise in synthesis of target molecule of custom synthesis and lab scale operations, scale-up operations of API's, drug intermediates and its key interdependencies. So far works multiple projects of API's and API impurity profiles process development & scale-up activity carried out.
- I have industrial experience in custom synthesis molecules, process research & development of API's and drug intermediates in custom pharmaceutical services, **Innovision Life Sciences Pvt.Ltd**. Expertise in synthesis of target molecule of custom synthesis and process research and development for technical breakthroughs with respect to process development, lab scale operations and scale-up operations of API's, drug intermediates and its key interdependencies. So far works ~3 different projects of API's process development & scale-up activity carried out.
- 9.0 years of industrial experience in research & development and the preparation of final targets and drug intermediates for client requirements in **GVK BIO Science Pvt.Ltd**. Works in different areas of synthetic organic chemistry e.g. Hetero cyclic chemistry, Parallel Synthesis, Linear Synthesis and transition metal catalyzed coupling reaction etc.
- 2.0 years of project management in **GVK BIO Sciences**.

- Ph.D. from **JNTU Kakinada**, Kakinada, Andhra Pradesh, India-533 003. Work in the areas of substituted quinazoline synthesis especially in hetero cyclic chemistry.
- Development of new reagents of synthetic importance in organic synthesis., New heterocyclic products synthesis, heterocyclic chemistry, parallel and Linear synthesis of Library molecules etc.
- Proficient in diverse areas of organic synthesis: Expertise in development of new reagents of synthetic importance in organic synthesis., heterocyclic chemistry, organo-metalic or transition metal catalyzed chemistry etc.

Current Job: Roles & Responsibilities

✓ My role is responsible for client projects by route designing and synthesis of molecules as per specifications, independently and/ or through supervision of a team of chemists.

✓ **Set-up and execute reactions for synthesis of target molecules:**

- Understand the project requirements and deliverables from supervisor/manager, as specified by the client
- Understand the reaction protocol, Literature search and execution of projects with in the self-estimated and targeted timelines
- Comprehend and discuss the MSDS (Material Safety Data Sheet) with supervisor/team members
- Identify and mitigate any potential safety risk with the help of supervisor
- Efficiently delegate work and monitor team members for effective planning, execution and delivery
- Plan and execute reactions independently with proper reagents and equipment (glassware, stirrers, vacuum pumps etc.) maintaining specified conditions (temperature, pressure etc.), with optimum usage and minimum wastage
- Ensure parallel execution of multiple reactions conducted both by self and the team
- Monitor progress of the reactions by using standard methods and analytical techniques
- Identify and execute appropriate workup and purification technique to produce an intermediate/ final compound of desired quality
- Analyze analytical data, comprehend results and identify the issues
- Troubleshoot as appropriate for successful execution with intimation to supervisor and guide juniors/team

- Meet productivity benchmarks on number of reactions/ number of steps/ number of compounds/ quantity/ compound purity/ project timelines of self and team

- **Improve delivery efficiency and quality through project management:**
  - Support project manager in finalizing the estimation of the project by identifying relevant literature and proposing appropriate synthetic routes
  - Assess potential risks on the project proposals
- **Ensure safety at work through enforcement of good laboratory practices:**
  - Follow safety protocols and guidelines in the labs
  - Maintenance and usage of equipment/apparatus/instruments as per SOPs
  - Guide team members/juniors on safety protocols and ensure compliance
- **Maintain records, data integrity and IP confidentiality:**
  - Document reactions, research findings/ observations accurately in lab note books as per client requirements to ensure data integrity
  - Maintain strict IP Confidentiality and adhere to all related policies
  - Preparation of Weekly Reports, Final Reports, Weekly update etc.
  - Identify and report non-compliance of LNB guidelines updated by junior team members
- **Ensure high morale and skill development of self and team:**
  - Guiding a team of chemists to meet productivity/ quality targets
  - Train & develop team members, regularly monitor their performance
  - Improve knowledge of organic chemistry (particularly synthesis)/ Analytical techniques etc

- ✓ Handling average 20-25 project per year.
- ✓ 5 chemists directly reporting to me.
- ✓ Create and sustain a high quality function which aims to continuously improve in competence, scientific excellence and innovation.
- ✓ Support to the Manager for new technology initiatives designed to increase efficiency and productivity. Develop effective interactions with other groups
- ✓ Interpretation of organic compounds by Mass (LC-MS & GC-MS), ^{1}HNMR, ^{13}CNMR, IR & HPLC
- ✓ Carrying out efficient separation and purification of compounds by Preparative Thin-Layer Chromatography, Column Chromatography, High Vacuum Fractional Distillation, grace purification technique and Recrystalization etc.

- ✓ Updating the projects by preparing weekly reports and Final Reports., participating in Teleconferences with the client over project reviews and updates
- ✓ Direct Interaction with the clients regarding the project requirements and updates.
- ✓ Lead and guide a team of chemists in process research and development for technical breakthroughs with respect to process development, lab scale operations and scale-up activities
- ✓ Planning and resources identification, giving project projections
- ✓ Coordination between various departments for smooth execution of the project
- ✓ Selection of non-infringing synthetic route by the thorough review of literature and patents.
- ✓ Development of echo-friendly, cost effective and plant feasible process from early feasibility study to lab validations
- ✓ Major role is to design cost effective and atom efficient synthetic routes of drug candidate product. Process-development of the synthetic routes selected for the development and undertakes scale-up activities (100 g to 1 Kg) for pre clinical, safety toxicology and commercial scale.
- ✓ Delivering the target products by strict adherence to safety while using different hazardous chemicals.
- ✓ Optimization and scale up of compounds having higher scale target
- ✓ Drive project completion in time and ensure high levels of customer satisfaction.
- ✓ Ensure that the team member work according to the SOPs and other laboratory best practices for GMP and GLP.
- ✓ Writing reports, research articles, reviews, delivering talks in conferences/work-shops

RESEARCH AND CONSULTANCY ACHIEVEMENTS

✓ International Academic Conference	:	3
✓ National Conferences	:	5
✓ Workshop Attended	:	2
✓ Oral Presentations	:	4
✓ Poster Presentations	:	6

PERSONAL BIODATA

Father`s Name **:** Mr. Surya Prakasha Rao
Residence Address : H.NO: 4-4-67, Street NO: 3

Raghavendra Nagar, Nacharam,
Hyderabad-500 076
Telangana, India

Permanent Address**:**

C/O- Mr. Surya Prakasha Rao
Gunupudi, Bhimavaram-534 201
West Godavari District
Andhra Pradesh
India.

LIST OF PUBLICATIONS

International Publications: 07

1. "Tandem One Pot (TOP) and efficient method for the palladium reagent-catalyzed cross-coupling of quinazoline thiols" Published in **Journal of Hetero Cyclic Chemistry-2014**, **Vol. 49, P. 992-995**

P Satya Karuna,[a] R.V.V. Ramana Murthy,[b] M.R.P. Reddy,[c] Naresh Kumar Katari[d] and Kummari Srinivas[d]

2. "Transition metal-promoted synthesis of 2-aryl/heteroaryl-thioquinazoline: C-S Bond formation by "Chan-Lam Cross-Coupling" Reaction" published in **Journal of Chemical Science-2016, Vol. 51, P. 899-902.**

Pulakhandam Satya Karuna,[a] M.R.P. Reddy,[b] and Naresh Kumar Katari[c*]

3. "Microwave-Promoted Syntheses of *S*-Substituted Quinazoline Derivatives from 1,4-dihydroquinazoline-2-thiol" published in **Letters in Drug Design & Discovery** - 2017, **Vol. 15, P. 583-589.**

Pulakhandam Satya Karuna,[a] M.R.P. Reddy,[b] and Naresh Kumar Katari[c*]

4. "Oxone mediated oxidation of 2-(aryl/alkyl thio) quinazolines: a green approach". (**Current Green Chemistry-2018, Vol 5, Issue 3, 108-113**).

Pulakhandam Satya Karuna[a], Siva Reddy Annem[b], Naresh Kumar Katari*[b] and M.R.P. Reddy[c]

5. Synthesis of Novel Analogues of 2-Thioquinazoline". Published in **Molecular Diversity-2018**.

Satya Karuna Pulakhandam[a], Naresh Kumar Katari[b,c]* and Sreekantha B. Jonnalagadda[c]

6. Preparation of linear frac concentration with different hydrocarbons like petrol, diesel, kerosene compatibility & breaker test by using oxidizer, breakers. Published in **Journal of Applied chemistry July, 2013**.
   R.V.V. Ramana Murthy[a], Subrahmannian P[a], Naresh Kumar Katari[b*], **P. Satya Karuna[b]** and M.R.P.Reddy[c]

7. L-Arginine catalysed knoevenagel Condensation: An Unambiguous synthesis of cyano-nitrophenylacetamide, benzimidazole acetonitrile & 3-indole substituted alkenes. Published in **Current organo catalysis 2015, P. 44-50**.
   K.Srinivas[a]*, Naresh Kumar Katari[a], **P. Satya Karuna[b]** and M.S.Surendrababu[c]

Oral Presentations

1. Microwave-Promoted Syntheses of *S*-Substituted Quinazoline Derivatives from 1,4-dihydroquinazoline-2-thiol. **Pulakhandam Satya Karuna,**[1] Naresh Kumar Katari,*[2] Rambabu Gundla,[2] and Manda Ravi Prakash Reddy[3]
   National Seminar on "**Shaping the future with Green Chemistry**" (**SFGC-14**). 27-28th JUNE 2014 held at S.P.M.H.Kalasala, Machilipatnam, Krishna District, A.P, India.

2. Copper catalysed synthesis of 2-aryl/heteryl-thioquinazoline: Cascade C-S Bond formation by "Chan-Lam Cross-Coupling" Reaction. **Pulakhandam Satya Karuna,**[a] M.R.P. Reddy,[b] and Naresh Kumar Katari[c*]
   National Seminar on "**The Role of Natural Product Chemistry in Drug Discovery**" (**RNPCDD-14**). 11-12th September 2014 held at Siddartha Auditorium, Vijayawada, A.P, India.

3. An efficient and convenient protocol for the synthesis of *S*-substituted Sulfonyl quinazoline derivatives using oxidizing reagents. **Pulakhandam Satya Karuna[a]**, Naresh Kumar Katari*[b]and M.R.P. Reddy[d]
   National Seminar on "**New Aspects of Heterocycle Chemistry in Medchem and Chemical Biology**". 19-20th February 2015 held at R.B.V.R.R.Womens College, Narayanaguda, Hyderabad-500027, Telangana State, India.

4. Design and Novel synthesis of Quinazolinone and its Derivatives. **P Satya Karuna[a]**, Naresh Kumar Katari *[b], Choragudi Chandrasekhar [a] and M.R.P. Reddy.
   International Conference on "**Trend setting Innovations in Chemical Sciences & Technology Nature Inspired Chemistry & Engineering**" (**TSCST-NICE-2016**). 4th-6th October 2016 held at JNTU Hyderabad-500085, Telangana state, India.

Poster Presentations

1. Tandem One Pot (TOP) and efficient method for the palladium reagent-catalyzed cross-coupling of quinazoline thiols. **P Satya Karuna,**[a] R.V.V. Ramana Murthy,[b] M.R.P. Reddy,[c] Naresh Kumar Katari[d] and Kummari Srinivas [d].
   International Conference on "**New Dimensions in Chemistry and Chemical Technologies Applications in Pharma Industry**" (**NDCT-2014**). 23th-24th JUNE 2014 held at JNTU Hyderabad-500085, Telangana state, India.

2. Microwave-Promoted Syntheses of *S*-Substituted Quinazoline Derivatives from 1, 4-dihydroquinazoline-2-thiol. **Pulakhandam Satya Karuna**,[1] Naresh Kumar Katari,*[2] Rambabu Gundla,[2] and Manda Ravi Prakash Reddy[3]
   National conference on "Drug **Discovery and Development in Chemistry Applications in Pharma Industry**" (**DDDC-2015**) on September 14th-15th2015 held at Sri Venkateswara university, Tirupati-2, A.P state, India.

3. An efficient and convenient protocol for the synthesis of S-substituted sulfonyl quinazoline derivatives using oxidizing reagents **P. Satya Karuna[a]**, Naresh Kumar Katari*[b] and M.R.P. Reddy[c.] National Seminar on "**Current Research Trends and Developments in Organic Synthesis**" (**CRTADIOS-2015**). 5th-6th October-2015 held at Aadikavi Nannaya University, Rajahmundry A.P state, India.

4. Design and Novel synthesis of Quinazolinone and its Derivatives. **P Satya Karuna[a]**, Naresh Kumar Katari *[b], Choragudi Chandrasekhar [a] and M.R.P. Reddy.
   International Conference on "**International Congress on Recent Advances in Chemistry and Chemical Engineering**" (**NDCT-2016**). 11th-13th JULY 2016 held at JNTU Hyderabad-500085, Telangana state, India.

5. Design and novel synthesis of new Thioquinazoline analogous. **P Satya Karuna[a]**, Naresh Kumar Katari *[b], Gundla Rambabu[b] and M.R.P. Reddy[c].
   "National Symposium" (**CRSI-NSC 21-2017**). 13th-15th JULY 2017 held at IICT Hyderabad-500076, Telangana state, India.

6. Design and novel synthesis of new Thioquinazoline analogous. **P Satya Karuna[a]**, Naresh Kumar Katari *[b], Gundla Rambabu[b] and M.R.P. Reddy[c].
   "National Symposium" **(Materials in Healthcare-2018**). 6th-8th September 2018 held in Gitam University, Hyderabad Telangana state, India.

National-Work Shops attended

1. One Day National Workshop on **"Modern Trends in Drug Discovery and Development (MTDDD- 16)"** in Gitam University, Hyderabad. April 2nd 2016.

2. One Day National Workshop on **"Big Data Applications in Drug Repurposing (BDADR- 17)"** in Gitam University, Hyderabad. October 23rd 2017.

Books Published

1. Research published in **"LAP LAMBERT Academic Publishing''** in Briv ibas gatv e197, LV-1039, Riga, Latv ia, European Union in April 29th 2019.

Place: Hyderabad
Date:
Signature:
Dr. Satya Karuna P