

# R. SRIDHAR

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## RESEARCH EXPERIENCE

### MASTER'S THESIS - (JAN 25 – MAY 25)

Research advisor: Prof. Jeyakumar Kandasamy, Pondicherry University, India.

Title: Strategic synthesis of D-Rhamnal from D-Glucal.

- Designed and optimized a cost-efficient multi-step synthetic route converting D-glucal into D-rhamnal, achieving overall yields of up to 60%.
- The key advantage of our approach is its cost efficiency, as the product value is approximately 5000-fold higher than that of the starting material. This high-value product was subsequently utilized in our collaborative work.

### LITERATURE SURVEY PROJECT - PONDICHERRY UNIVERSITY (JAN 25 - MAY 25)

Title: Innovations in the Ferrier Reaction: Green Chemistry and Catalytic Strategies.

- Analyzed 25+ peer-reviewed publications, comparing catalysts and reaction systems for efficiency and sustainability.
- Proposed greener synthetic and catalytic strategies that aligned with green chemistry principles.

### SUMMER INTERNSHIP (PG) - (JULY 24 - DEC 24)

Research advisor: Prof. Jeyakumar Kandasamy, Pondicherry University, India.

Title: Ferrier type-I rearrangements for the different Glycols to yield 2, 3-unsaturated glycosides

- Synthesized a series of 2,3-unsaturated glycosides via Ferrier Type-I rearrangement using D-glucal, D-galactal, D-rhamnal, and L-rhamnal precursors, achieving yields of up to 95%.
- Investigated the influence of acetate protecting groups on selectivity and efficiency. Documented mechanistic insights involving **allyloxocarbenium ion** intermediates and hydride migration.

## PUBLICATION

Research advisor: Prof. Jeyakumar Kandasamy, Pondicherry University, India.

*A Versatile Synthetic Route to C-2 Aryl Glycosides under mild condition. Co-author (Manuscript under preparation)*

- Contributed to developing a palladium-catalyzed arylation protocol for pseudoglycols under ambient conditions.
- Developed and optimized synthetic routes for 15+ aryl glycoside derivatives (yield  $\leq 85\%$ ) using  $^1\text{H}/^{13}\text{C}$  NMR and HRMS for structural confirmation.
- Investigated stereochemical outcomes, protecting groups participation and reaction limitations across various pyranosides and protecting groups.
- Identified the limitations with few substrates and protecting groups, informing future synthetic optimization.

## EDUCATION

- M.Sc. Chemistry - Pondicherry University, India (2023 - 2025)

Final Grade: A+ | EQF level 7 | University Merit Scholarship (3rd Rank)

- B.Sc. Chemistry - St. Joseph's College, Tiruchirappalli, India (2020 - 2023)

Final Grade: A+ | EQF level 6 | Sports team Captain (Ball Badminton)

## SKILLS

**Experimental Techniques:** Hands-on experience in TLC, Column Chromatography, vacuum filtration, distillation, NMR, ESI-HRMS, FT-IR, and UV-Vis spectroscopy. Theoretical knowledge of HPLC, LC-MS, GC-MS, XRD, TGA, AAS, and ICP-MS.

**Computational expertise:** Molecular modelling (ChemDraw, Spartan, GaussView), DFT studies (Gaussian-09), Molecular docking (PyRx, MGL tools, Discovery Studio), Spectral interpretation (MestreNova, Sisweb).

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## OFFLINE COURSES

### St. Joseph's College:

- Pharmaceutical Chemistry (2021)
- Separation and Instrumental Techniques (2022)
- Food Standards and Quality Control (2023).

### Bharathidasan University:

- Office Automation (2016)
- Programming Techniques (2017)

## ONLINE COURSES

### Discovery Boulevard:

- Molecular docking & multi-ligand screening (2025)
- Homology modelling (2025)
- Drug-likeness filtering and ADMET analysis (2025)

### CIPET-IPT, Kochi:

- Polymers in Electronics (2025)
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## HONORS AND AWARDS

- **Qualified National Examinations:** GATE 2025 (CY) and CSIR-NET June 25 (PhD Only).
  - **Merit Cum Means Scholarship** – Pondicherry University; awarded for outstanding performance in M.Sc. Chemistry.
  - **Awards:** Special Award for Sports and Games at Achievers Day, St. Joseph's College (2023).
  - Consecutive Winner in Inter-Collegiate Ball Badminton Tournament, Bharathidasan University (2022, 2023).
  - Prof. A. C. Joseph Medal at the 178<sup>th</sup> College Day, St. Joseph's College (2022).
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## CONFERENCES & WORKSHOPS

- International Conference on Frontiers in Chemical Sciences (ICFCS 2025) – **Participant & Student volunteer**
  - National Conference on Recent Advancements in Chemistry and Environmental Sciences (RACES 2024) – **Participant**.
  - Indo-ASEAN Symposium on Organic Synthesis and Medicinal Chemistry (NOV 2024) - **Participant**.
  - One day National Workshop on Green Hydrogen: Technology to Application (DEC 2024) - **Participant**.
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## ADDITIONAL INFORMATION

- **Academic Enrichment:** Inspire Internship Programme (2018), State-Level Common Aptitude Test (2017), 14th Chemistry Research Drive (CRD-2025) by RJSF.
  - **Leadership:** Captain, College Ball Badminton Team - led my team to won multiple state level championships.
  - Languages: English (C1 level), Tamil & Telugu (Native)
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## REFERENCES

1. **Prof. Dr. Jeyakumar Kandasamy**, Associate Professor, (**Research Advisor**),  
Dept. of Chemistry, Pondicherry University, India.  
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2. **Prof. Dr. S. Sabiah**, Professor,  
Dept. of Chemistry, Pondicherry University, India.  
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