

RUTUJA ARAVIND KATARE

M.Sc. Medicinal Chemistry | Organic Synthesis | Catalysis

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PROFESSIONAL SUMMARY

Postgraduate chemist (M.Sc. Medicinal Chemistry) with hands-on experience in multi-step **organic synthesis**, **heterocyclic chemistry**, and **spectroscopic characterization**. Academic seminar on **organocatalysis (DBU)** covering base-mediated transformations, CO₂ fixation, and controlled polymerization. Keenly interested in **catalysis**, **green chemistry**, and **sustainable synthetic routes** toward cleaner, lower-waste chemistry. Careful at the bench, strong on mechanistic reasoning, and able to work both independently and as part of a team.

KEY SKILLS & COMPETENCIES

- Multi-step organic synthesis
- Heterocyclic chemistry (benzimidazole, pyrazine)
- Organocatalysis & reaction mechanisms
- Green & sustainable chemistry
- Characterization: ¹H-NMR, IR, Mass Spec
- Purification: recrystallization, TLC monitoring
- Reflux, oxidation, cyclization techniques
- Documentation, reproducibility, lab records

PROJECTS & RESEARCH

Seminar — DBU as an Organocatalyst

M.Sc. Medicinal Chemistry, P.A.H. Solapur University

- Studied **1,8-diazabicyclo[5.4.0]undec-7-ene (DBU)**, a sterically hindered, non-nucleophilic amidine base, as a versatile organocatalyst in organic synthesis.
- Reviewed its catalytic role across **elimination, isomerization, esterification, amidation, and condensation (Michael) reactions**, including synthesis and physical behaviour of the catalyst.
- Highlighted green-chemistry applications: **CO₂ fixation** and **ring-opening polymerization of L-lactide**.

Project — Synthesis of Pyrazinobenzimidazole Derivatives

Group project (individual contribution to main synthetic tasks) · School of Chemical Sciences, P.A.H. Solapur University

- Synthesized **pyrazino[1,2-a]benzimidazole derivatives** — fused heterocycles of medicinal-chemistry interest.
- Prepared **2-acetylbenzimidazole** (via 2-(hydroxyethyl)benzimidazole then oxidation), reacted with substituted α-bromoacetophenones and K₂CO₃ to form diketone intermediates, and cyclized with ammonium acetate in acetic acid to the target derivatives.
- Prepared and characterized **five analogues** (H, 4-Cl, 4-F, 4-NO₂, 4-Br) by **melting point and ¹H-NMR**, with reaction progress monitored by TLC.

EDUCATION

M.Sc., Medicinal Chemistry

2020 – 2022

School of Chemical Sciences, P.A.H. Solapur University, Solapur · 74.36%

B.Sc., Chemistry

2017 – 2020

Walchand College of Arts & Science, Solapur · 75.26%

RESEARCH INTERESTS

Catalysis and organocatalysis • Green & sustainable chemistry • Sustainable synthetic routes • CO₂ utilization • Heterocyclic & medicinal chemistry

DECLARATION

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

Place: Pune Date: 13 July 2026 (Rutuja Aravind Katare)