

CHAPTER 6

Concluding remarks and future scopes

Concluding remarks:

1. Convenient synthetic methodologies for the synthesis of structurally important pyrimidine scaffolds viz. pyrido[2,3-*d*]pyrimidine, pyrrolo[2,3-*d*]pyrimidine and pyrido[2,3-*d*:6,5-*d'*]dipyrimidine-2,4,6,8-tetraone have been developed.
2. KI-VO(acac)₂-H₂O₂-AcOH has been established as an efficient iodinating agent for regioselective iodination of pyrimidinediones at C-5 position.
3. Some of the synthesized compounds have been found to possess modest antibacterial activity. Antibacterial activity can be increased by functional modification e.g. -NO₂ to -NH₂.

Future scopes:

1. Detailed mechanistic studies can be carried out to establish mechanisms.
2. Computational studies can be carried out to explain the experimental findings.
3. Synthesized compounds can be screened for other possible biological activity.

List of publications

1. A convenient synthesis of novel 5-aryl-pyrido[2,3-*d*]pyrimidines and screening of their preliminary antibacterial properties: **Saikia, L.**; Das, B.; Bharali, P.; Thakur, A. J. *Tetrahedron Lett.* **2014**, *55*, 1796-1801.
2. KI-VO(acac)₂-H₂O₂-AcOH, A new iodinating system for selective iodination at C-5 position of activated pyrimidinediones: A combined experimental and density functional study: **Saikia, L.**; Talukdar, D.; Deha, R. C.; Thakur, A. J. *J. Heter. Chem.* **2013**, *50*, 1031-1038.
3. Environment-friendly and solvent-free synthesis of symmetrical bis-imines under microwave irradiation: Das, S.; Das, V. K.; **Saikia, L.**; Thakur, A. J. *Green Chem. Lett. Rev.* **2012**, *5(3)*, 457-474.
4. A rapid, convenient, solventless green approach for the synthesis of oximes using grindstone chemistry: **Saikia, L.**; Baruah, J. M.; Thakur, A. J. *Org. Med. Chem. Lett.* **2011**, *12(1)*, 1-6.
5. Zirconyl Chloride: An efficient, water-tolerant, and reusable catalyst for the synthesis of N-Methylamides: Talukdar, D.; **Saikia, L.**; Thakur, A. J. *Synlett.* **2011**, *11*, 1597-1601.
6. Deprotection chemistry mediated by ZrOCl₂·8H₂O: An efficient and mild green method for the conversion of oximes to carbonyl compounds in aqueous acetone: **Saikia, L.**; Das, S.; Thakur, A. J. *Synth. Commun.* **2011**, *41*, 1071-1076.
7. Sodium triacetoxyborohydride: **Saikia, L.** *Synlett.* **2010**, *11*, 1729-1730.
8. 6,6'-Diamino-1,1',3,3'-tetramethyl-5,5'-(4-chlorobenzylidene)bis[pyrimidine-2,4(1*H*,3*H*)-dione]: Das, S.; Saikia, B. K.; Das, B.; **Saikia, L.**; Thakur, A. J. *Acta Cryst.* **2009**, *E65*, o2416-o2417.
9. A one pot, two-step avenue for synthesis of 5-arylpyrrolo[2,3-*d*]pyrimidines: **Saikia L.** & Thakur A. J. (under communication).
10. Ionic liquid catalyzed, microwave assisted synthesis of Pyrido[2,3-*d*:6,5-*d'*]dipyrimidine-2,4,6,8-tetraones: Saikia L. & Thakur, A. J. (under communication).

Book chapter published:

1. **Saikia, L.** Pyrimidines: A universal topic of research in organic and medicinal chemistry, in *Recent advances in biological and chemical sciences, Perspectives to north east India*, (Eds Roy, S. & Boruah, B.), Global Publishing House: India, 2014, pp-163-172.

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Educational Profile:

Degree/ Examination	Institute / University / Board	Year	Marks (%)	Division
M.Sc.	Dibrugarh University	2006	72.3	I
B.Sc.	Dibrugarh University	2004	64.4	I
HSSLC	AHSEC	2001	72.2	I
HSLC	SEBA	1999	75.4	I

Accolades:

1. Qualified CSIR-UGC-NET for CSIR-JRF in June, 2011.
2. Qualified CSIR-UGC NET for Lectureship in December, 2010.
3. Qualified GATE in 2006 (GATE-06).

Research Experience:

1. Worked as a JRF in a CSIR sponsored project entitled 'Radical cyclisation methodology in the synthesis of pyrimidine derivatives' for two years and as a SRF in the same for one year in the Department of Chemical Sciences, Tezpur University, Assam.

2. Seven years research experience as Ph. D. student in the Department of Chemical Sciences, Tezpur University under the supervision of Dr. A. J. Thakur, Associate Professor, Department of Chemical Sciences, Tezpur University, Assam.

Teaching Experience:

1. I have been associated with the Department of Chemistry, Rajiv Gandhi University, Rono Hills, Doimukh as Assistant Professor since 19th August, 2011.

Papers Published:

1. A convenient synthesis of novel 5-aryl-pyrido[2,3-*d*]pyrimidines and screening of their preliminary antibacterial properties: **Saikia, L.**; Das, B.; Bharali, P.; Thakur, A. J. *Tetrahedron Lett.* **2014**, *55*, 1796-1801.
2. KI-VO(acac)₂-H₂O₂-AcOH, A new iodinating system for selective iodination at C-5 position of activated pyrimidinediones: A combined experimental and density functional study: **Saikia, L.**; Talukdar, D.; Deka, R. C.; Thakur, A. *J. Heter. Chem.* **2013**, *50*, 1031-1038.
3. Environment-friendly and solvent-free synthesis of symmetrical bis-imines under microwave irradiation: Das, S.; Das, V. K.; **Saikia, L.**; Thakur, A. J. *Green Chem. Lett. Rev.* **2012**, *5(3)*, 457-474.
4. A rapid, convenient, solventless green approach for the synthesis of oximes using grindstone chemistry: **Saikia, L.**; Baruah, J. M.; Thakur, A. *J. Org. Med. Chem. Lett.* **2011**, *12(1)*, 1-6.
5. Zirconyl Chloride: An efficient, water-tolerant, and reusable catalyst for the synthesis of N-Methylamides: Talukdar, D.; **Saikia, L.**; Thakur, A. J. *Synlett.* **2011**, *11*, 1597-1601.
6. Deprotection chemistry mediated by ZrOCl₂·8H₂O: An efficient and mild green method for the conversion of oximes to carbonyl compounds in aqueous acetone: **Saikia, L.**; Das, S.; Thakur, A. J. *Synth. Commun.* **2011**, *41*, 1071-1076.
7. Sodium triacetoxyborohydride: **Saikia, L.** *Synlett.* **2010**, *11*, 1729-1730.

8. 6,6'-Diamino-1,1',3,3'-tetramethyl-5,5'-(4-chlorobenzylidene)bis[pyrimidine-2,4(1*H*,3*H*)-dione]: Das, S.; Saikia, B. K.; Das, B.; **Saikia, L.**; Thakur, A. J. *Acta Cryst.* **2009**, *E65*, o2416-o2417.

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Participation in Workshop / Seminar:

1. Participated in 'SERC Summer School in Modelling and Informatics in Drug Design' organized by National Institute of Pharmaceutical Education and Research, Punjab.
2. Participated in '14th National Workshop on Catalysis' held at Tezpur University, Assam.
3. Participated in 'Frontier Lecture Series' organized by Tezpur University, Assam.
4. Participated and presented a poster in 13th CRSI National Symposium in Chemistry held at National Institute of Science Education and Research (NISER) and KIIT University, Bhubaneswar.
5. Participated in 'Workshop on Integrated Arsenic and Iron Removal from Groundwater: 'Arsiron Nilogon'' organized by Tezpur University, Assam.

Declaration:

I, Lakhinath Saikia hereby declare that all the information furnished here are true & correct to the best of my knowledge and belief and the event of information being found false or incorrect, I am agree to accept any action against me.

Lakhinath Saikia

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