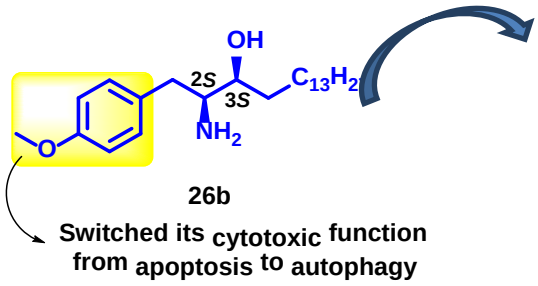
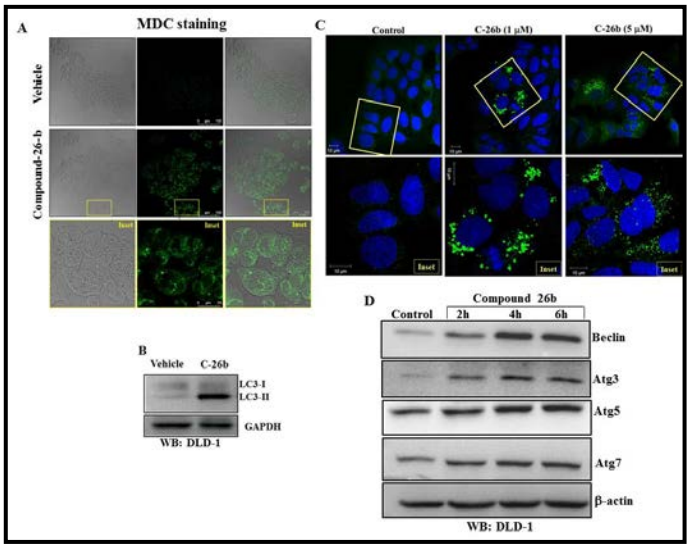
List of 10 best papers of the applicant highlighting the important contributions in them briefly (CI means Citation Index)

1. New Spisulosine Derivative Promotes Robust Autophagic Response to Cancer Cells; Asha Ganesher, Priyank Chaturvedi, Sanjeev Meena, Dipak Datta*, Gautam Panda*, European Journal of Medicinal Chemistry, 2020, 188, 112011

Therapy resistance by evasion of apoptosis could be one of the hallmarks of human cancer. Therefore, restoration of cell death by non-apoptotic mechanisms is critical to successfully overcome therapy resistance in cancer. By rational drug design approach, here we try to provide evidence that subtle changes in the chemical structure of spisulosine completely switched its cytotoxic function from apoptosis to autophagy. Our most potent molecule (**26b**) in a series of 16 synthesized derivatives of Spisulosine showed robust autophagic cell death in diverse cancer cells sparing normal counterpart. Compound **26b** mediated lethal autophagy induction was confirmed by formation of characteristic autophagic vacuoles, LC3 puncta formation, upregulation of signature autophagy markers like Beclin and ATG family proteins. Altogether, we have detected novel autophagy inducer small molecule which can be tested further for drug discovery research.

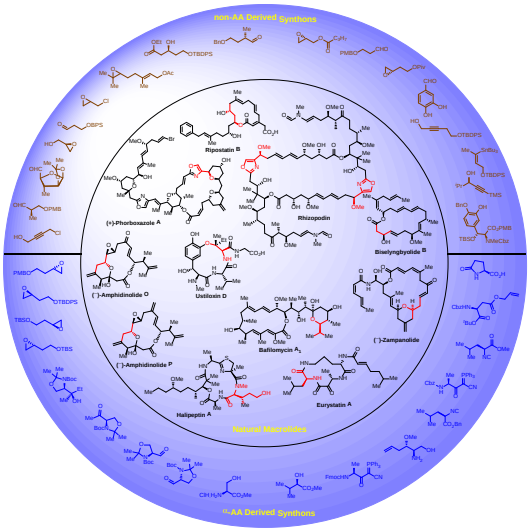


Compound 26b promotes Autophagic cell death



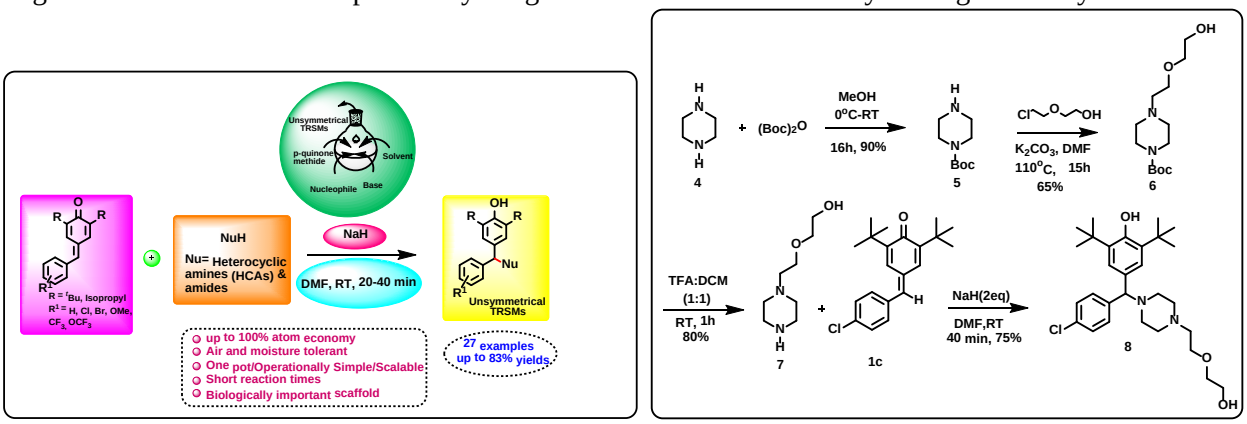
2. A Comparative Synthetic Strategy Perspective on α-Amino Acids (α-AA) and Non-Amino Acid Derived Synthons towards Total Syntheses of Selected Natural Macrolides; Srinivas Lavanya Kumar M, Shashank Tripathi, Anirban Ghoshal, Mayur D. Ambule, Ajay Kumar Srivastava, and Gautam Panda, Chemistry A European Journal; 2020, 26, 5131-5156

Macrolides and cyclopeptides have immense application in drug discovery research, with more than 100 approved drugs or clinical drug candidates bearing the macrocyclic scaffolds as biologically active components. The review provides an interesting perspective about the use of both amino acid derived and non-amino acid derived synthons towards synthesis of selected natural macrolides. The synthetic routes, key steps, overall yield, number of steps involved have been discussed to gain a comparative insight between the amino acid and the non-amino acid routes towards synthesis of the macrolides



3. **Base mediated 1,6- Aza-Michael addition of heterocyclic amines and amides to p-QMs leading to Meclizine, Hydroxyzine and Cetirizine like architectures**, Deblina Roy, Gautam Panda, Synthesis 2019, 51, 4434-4442 (10.1055/s-0039-1690677) https://www.thieme.de/en/thieme-chemistry/synform-news-novel-approach-to-antihistamine-type-scaffolds-148429.htm#

Reported herein is an expeditious, cost-effective synthetic methodology for a wide range of nitrogen containing unsymmetrical trisubstitutedmethanes (TRSMs). The synthesis involves base mediated 1,6-conjugate addition of heterocyclic amines and amides to substituted p-QMs giving the unsymmetrical TRSMs in moderate to very good yields (up to 83%) in one pot. The low-cost, mild temperature, high atom economy and yields, easy scale up, broad substrate scope are some of the salient features of this protocol. The methodology could further be extended for the synthesis of biologically important first generation antihistamines Meclizine, Hydroxyzine and Cetirizine like molecules highlighting the utility of the work. Importantly, the presence of halo substituent in most of the molecules allows for further late stage functionalization which paves way for generation of chemical library in drug discovery.



Synthesis of Hydroxyzine and Cetirizine like molecules

4. Priyanka Singh, Sudipta Kumar Manna, Amit Kumar Jana, Tiash Saha, Pankaj Mishra, Saurav Bera, Maloy Kumar Parai, Srinivas Lavanya Kumar M., Sankalan Mondal, Priyanka Trivedi, Vinita Chaturvedi, Shyam Singh, Sudhir Sinha and **Gautam Panda**;
Thiophene containing Trisubstituted Methanes [TRSMs] as identified lead against Mycobacterium Tuberculosis; *European Journal of Medicinal Chemistry*, Volume 95, 5 May **2015**, Pages 357-368 (CI 12)

Triarylmethanes (TRAMs) and thiophene containing trisubstituedmethanes (TRSMs) have been reported by us, having potential against Mycobacterium tuberculosis and Mycobacterium fortuitum strains, respectively. Further, extension through synthesis and biological evaluation of novel TRSMs resulted into an identified lead 36 (S006-830) [(diisopropyl-(2-{4-[(4-methoxy-phenyl)- thiophen-2-yl-methyl]-phenoxy}-ethyl)-amine) with MIC; 1.33 mg/L, non-toxic against Vero C-1008 cell line with selectivity index >10, ex-vivo efficacy equivalent to first line TB drugs-isoniazid (INH), rifampicin and pyrazinamide in the mouse and human bone marrow derived macrophages tuberculosis model, respectively and CFU count of 2.2 x 107 (approximately 15 fold lesser than untreated mice (31 x 107) with comparable efficacies to ethambutol (EMB) (1.27 x 107) and PZA (1.9 x 107). Further, S006-830 also showed potent bactericidal activity against multi-drug resistant and single-drug resistant clinical isolates of M. tuberculosis.

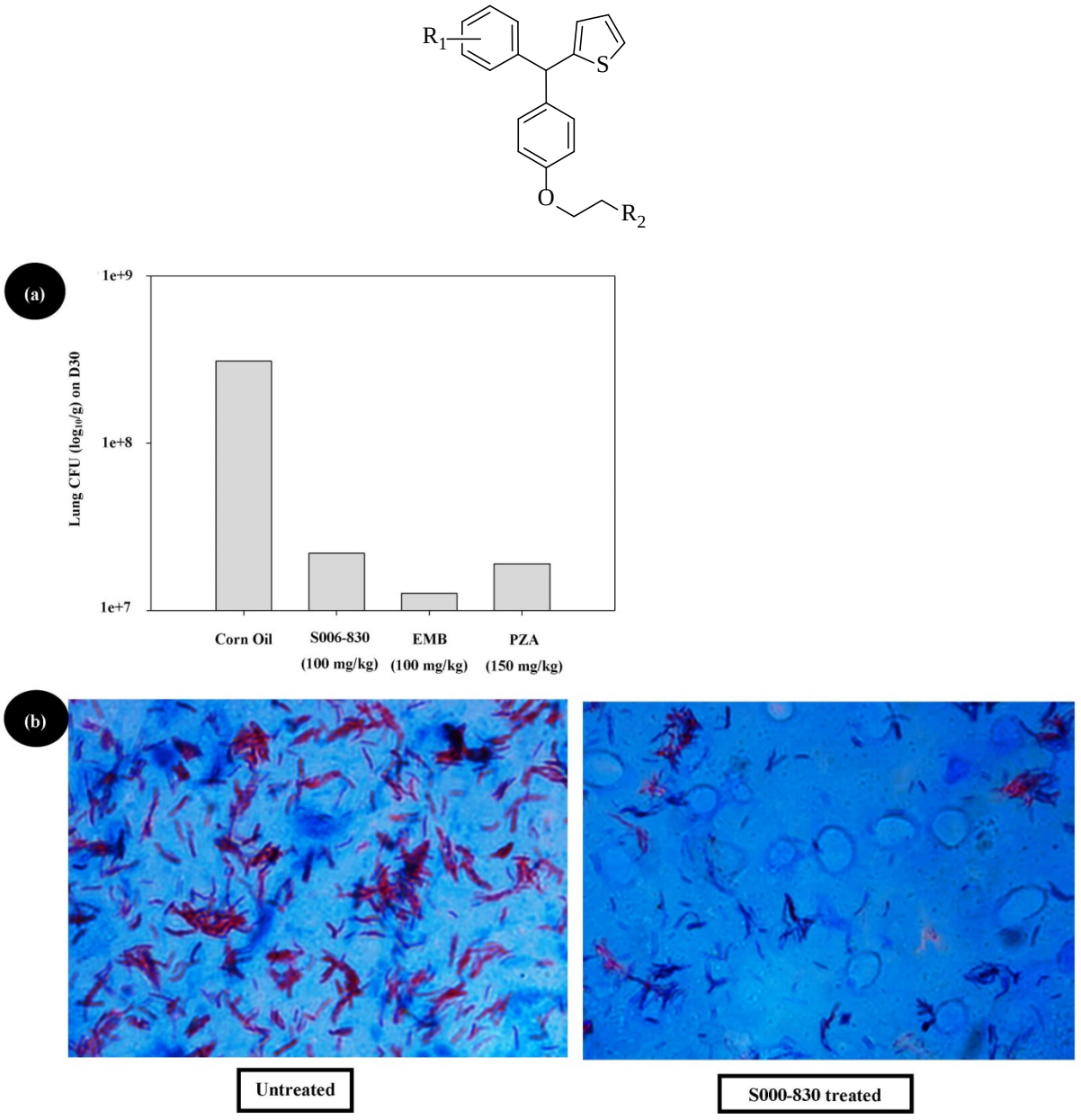


Figure. Results of *in vivo* protection experiments in mice infected (i.v.) with *M. tuberculosis* H37R_v.

A) **S006-830** treated mice (100 mg/kg body wt, by oral gavage, 6 d/w, x 4w) showed appx.15 fold reduction in CFU in lungs, which was equivalent to in vivo efficacy of standard drugs ethambutol (EMB) and pyrazinamide (PZA) B) represents the Z-N staining of lung homogenate untreated and treated with **S006-830**

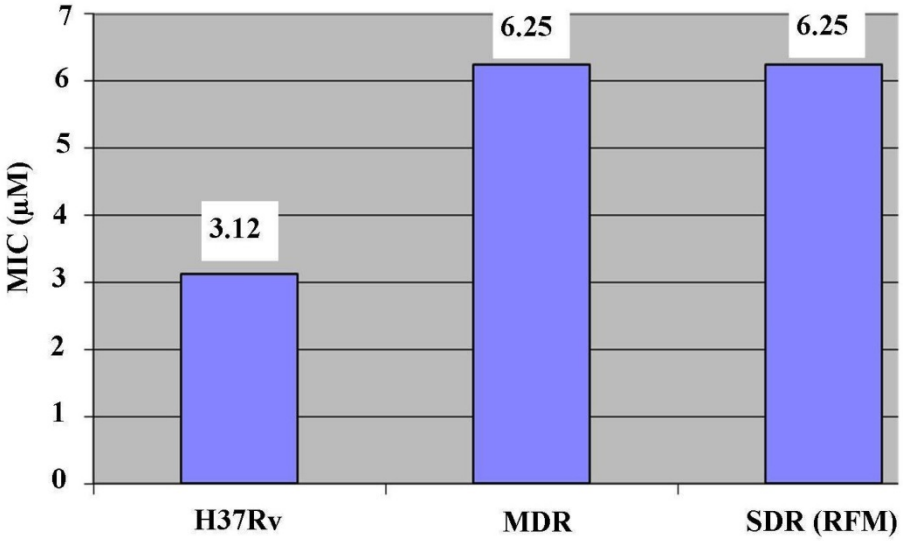
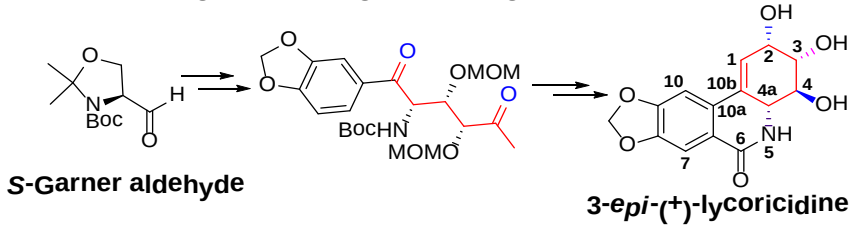


Figure. Activity of **36 (S006-830**) against sensitive ($H37R_V$), single- and multi- drug resistant *M. tuberculosis*

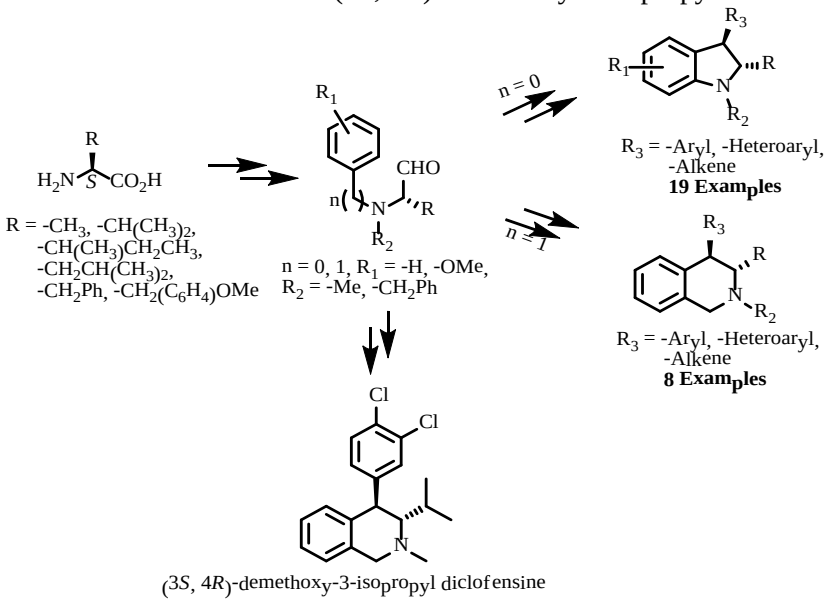
5. Total Synthesis of C_3-*epi*-(+)-Lycoricidine from Garner aldehyde via Intramolecular Aldol Cyclization
Saurav Bera, Sanjit Kumar Das, Tiash Saha and Gautam Panda*, Tetrahedron Letters, 56, 1, 2015, 146-149

A highly efficient total synthesis of 3-*epi*-(+)-lycoricidine, which belongs to lycorine-type Amaryllidaceae alkaloids having strong antitumour activity, has been described for the first time from easily available (*S*)-Garner aldehyde with an overall yield of 7% in 20 steps. Stereoselective nucleophilic addition, Sharpless asymmetric dihydroxylation, Dess-Martin periodinane oxidation, intramolecular aldol cyclization and Luche reduction are the salient features of this approach. The suitability of this method lies on the construction of C-ring with 4 contiguous stereogenic centres.



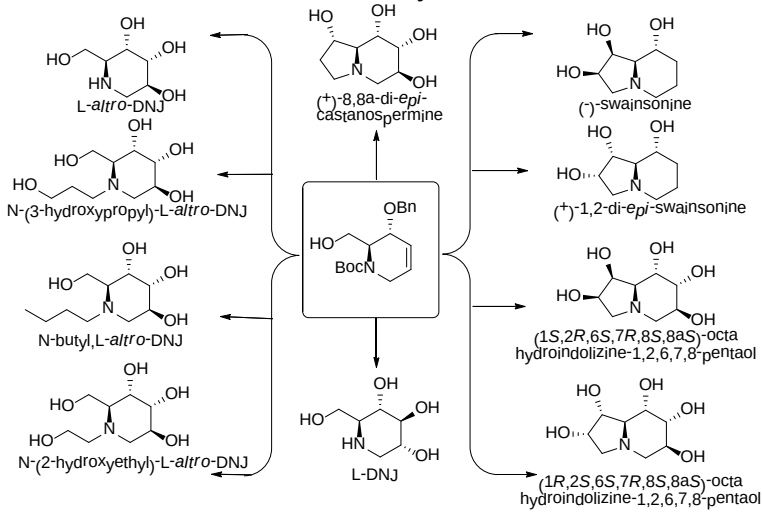
6. Benzofused Enantiomerically Pure Bicyclic Heterocycles: Asymmetric Friedel-Crafts Reaction towards Indolines and Tetrahydroisoquinolines through S-Amino Acids Derived Chiral Carbocation
Sudipta Kumar Manna and Gautam Panda*, Org. Biomol. Chem, 2014, 11, 8318-24
Enantiomerically enriched indolines and tetrahydroisoquinolines were synthesized within 5 min to 2 h in high yields from easily accessible (S)-amino acids derived chiral carbocations. The diastereoselective Friedel-Crafts reaction is promoted by Lewis acid ($AlCl_3$) offering trans-diastereoselectivity. The rate of the reaction and diastereoselectivity of the product are significantly influenced by steric hindrance of

substituents of amino acids and aryl groups. The methodology can be applied for the synthesis of enantiomercally enriched bioactive scaffold (3S, 4R)-demethoxy-3-isopropyl diclofensine.



7. Synthesis of polyhydroxylated indolizidines and piperidines from Garner's aldehyde: total synthesis of (−)-swainsonine, (+)-1,2-di-*epi*-swainsonine, (+)-8,8a-di-*epi*-castanospermine, pentahydroxy indolizidines, (−)-1-deoxynojirimycin, (−)-1-deoxy-*altro*-nojirimycin, and related diversity; Priyanka Singh, Sudipta Kumar Manna and Gautam Panda*, *Tetrahedron*, **2014**, *70*, 1363-1374

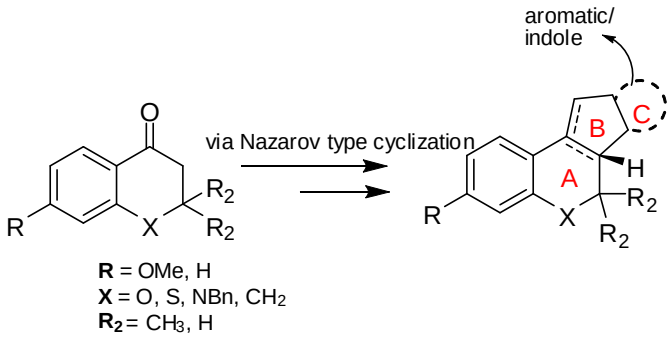
Diastereoselective and diverse synthesis of polyhydroxylated indolizidines and piperidines have been described, where a common chiral intermediate 2-(hydroxymethyl) piperidine-3-ol is converted into (-)-Swainsonine, (+)-1,2-Di-epi-swainsonine, (+)-8,8a-Di-epi-castanospermine, Pentahydroxy Indolizidines, (-)-1-Deoxynojirimycin, (-)-1-Deoxy-altro-nojirimycin and related diversity. The key steps were hydroxy directed intramolecular aminomercuration, Mitsunobu cyclisation and diastereoselective dihydroxylation.



8. Singh, R.; and **Panda, G**.: Application of Nazarov type electrocyclization to access [6-5-6] and [6-5-5] core embedded new Polycycles: an easy entry to tetrahydrofluorene scaffolds related to Taiwaniaquinoids

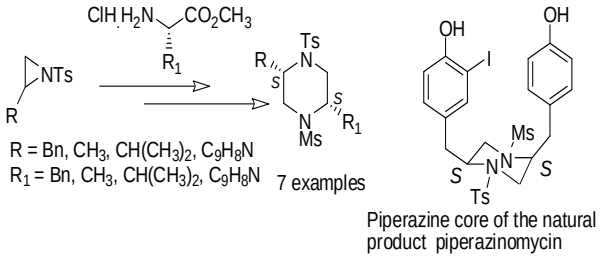
and C-*nor*-D *homo*steroids, *Org. Biomol. Chem.*, **2011**, *9*, 4782-4790 (**CI 33**, **selected as cover page article)**.

We have reported an easy, general and expedient route to access variety of uncommon hetero [6-5-6]ABC tetrahydrofluorene cores resembling all carbotricyclic [6-5-6] tetrahydrofluorene cores present in Taiwaniaquinoids as well as in C-nor-D-homo steroids. Efforts have also been made to synthesize several hetero [6-5-5] tricyclic systems via Nazarov type cyclization. This is first such heteroaromatic Nazarov system which showed excellent regioselectivity under very mild reaction conditions using just 2 mol% $Sc(OTf)_3$, providing high yielding functionalized scaffolds that could serve as valuable building blocks towards Diversity Oriented Synthesis



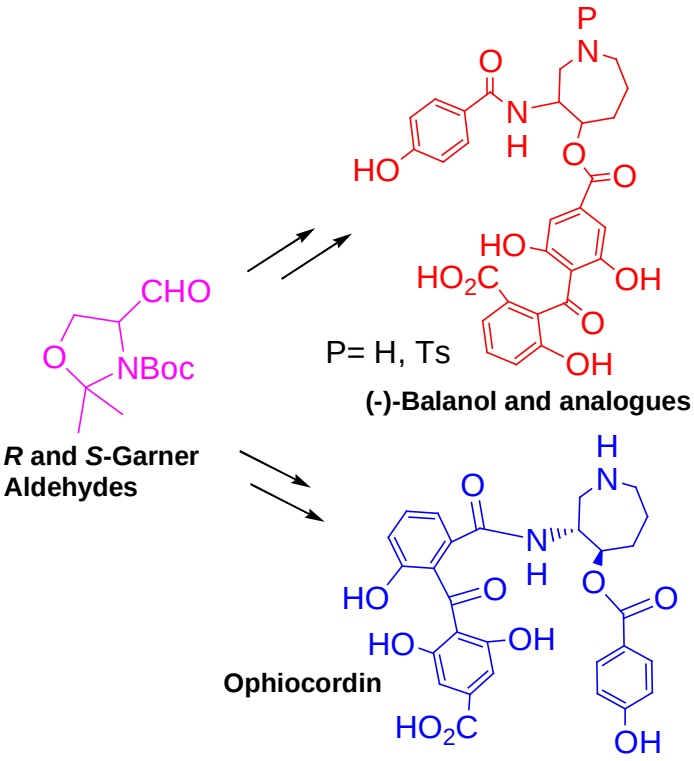
9. Samanta, K.; and **Panda, G.**: Regioselective Ring-Opening of Amino Acid-Derived Chiral Aziridines: an Easy Access to cis-2, 5-Disubstituted Chiral Piperazines; *Chemistry an Asian Journal*, **2011,** *6*, 189-197 (**CI 28**).

Four-step efficient synthetic strategy for cis-2,5-disubstituted chiral piperazines derived from amino acids based aziridines are described. First report of BF3.OEt2 mediated highly regioselective ring opening of less reactive N-Ts chiral aziridines by α-amino acids methyl ester hydrochloride followed by Mitsunobu cyclization are the key reaction steps. This protocol was used in an attempt to construct the piperazine core framework of natural product (+)- piperazinomycin.



10. Srivastava, A. K., and **Panda, G.**: Total Synthesis of (-)-Balanol, its all Stereoisomers, their N-tosyl analogues and fully protected Ophiocordin: An easy access to hexahydroazepine cores from Garner aldehydes. *Chemistry A European Journal,* **2008,** *14*, 4675-4688 (**CI 64**).

Total synthesis of Protein Kinase C (PKC) inhibitor (-)-Balanol and its all stereoisomers are described starting from easily available Garner aldehydes. Diastereoselective Grignard reaction on Garner aldehydes and ring closing metathesis are the key steps for the construction of hexahydroazepine subunits. The benzophenone subunits were constructed through coupling of properly functionalized aromatic aldehyde and bromo components. The synthetic route constitutes a convenient and scalable reaction sequence to generate all the stereoisomers of balanol. The methodology is further explored for the synthesis of N-tosyl-analogues of balanol and fully protected antifungal antibiotic ophiocordin.



11. Parai, M. K., and **Panda, G**.: A convenient synthesis of chiral amino acid derived 3,4-dihydro-2H-benzo[b][1,4]thiazines and antibiotic levofloxacin. *Tetrahedron Letters*, **2009,** *50*, 4703-4705 (**CI 69**).

A series of 3,4-dihydro-2H-benzo[b][1,4]thiazine derivatives 8a–g were synthesized via- a copper-catalyzed intramolecular N-aryl amination reaction on substituted 2-(2-bromophenylthio)-ethanamines which were synthesized by the nucleophilic substitution reaction of 2-bromobenzenethiol with Boc-protected amino alcohol derivatives. This strategy provides a short and an efficient entry to (S)-3-methyl-1,4-benzoxazine 12, an advanced synthetic intermediate for the synthesis of levofloxacin.