Heterocyclic Letters
Vol. 14| No.2|220-233|Feb-April|2024
ISSN : (print) 2231–3087 / (online) 2230-9632
CODEN: HLEEAI
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Graphical abstract

Paper-1	Heterocyclic Letters 14: iss.-2 (2024), 235-241

Synergetic and One-Pot Synthesis of 2-Hydazinyl 1,3-Thiazinyl 2H-Chromen-2-one Derivatives

Bhargavi Lakshmi Jadimenu[1] Shashikala Kethireddy[1], Bhaskar Pittala[2], Laxminarayana Eppakayala[2*], Sreekanth Reddy Ganji[3] and Paramesh Donta[2]

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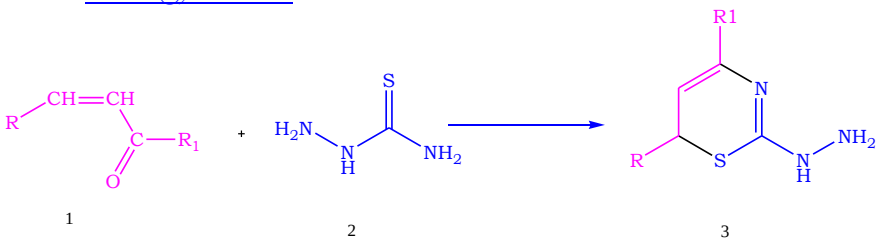
[3]G. Narayanamma Institute of Technology And Science, Shaikpet, Hyderabad-500104 Telangana
**Email: elxnkits@yahoo.co.in*



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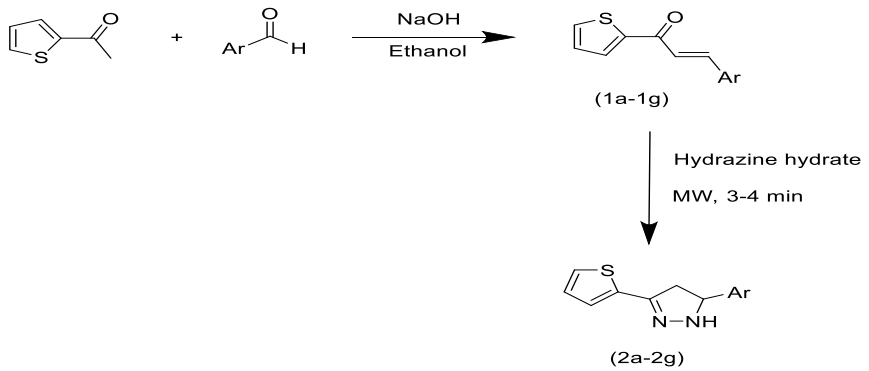
Paper-2	Heterocyclic Letters 14: iss.-2 (2024), 243-248

Microwave assisted synthesis and study antimicrobial activity of novel 3,5 arylated 2-pyrazolines

S.L. Kumbhare[a*], Y.K. Meshram[b]

[a]Department of Chemistry, Shri Shivaji Science & Arts College, Chikhli, Dist.- Buldana (M.S.), 443201, India
[b]Department of Chemistry, G.S. College, Khamgaon, Dist.- Buldana (M.S.),444303, India
**Corresponding author Email: infoslkumbhare@yahoo.com*

The rapid, simple microwave-assisted synthesis of 3(Thiophene-2-yl)-5-Phenyl-2-Pyrazoline derivatives reactions are performed neat at 600 watt for 2-3 minutes.



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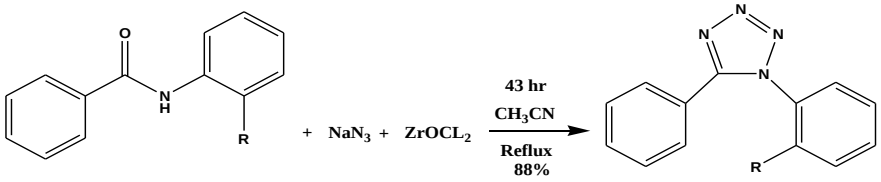
Paper-3	Heterocyclic Letters 14: iss.-2 (2024), 249-254

A one pot method for the synthesis of 1-(2-trifluoromethanphenyl)-5-phenyl-1h-tetrazole (1, 5-disubstituted tetrazole) catalyzed by zirconium oxychloride and their antibiotic activity

***G.Nageswara Rao, M.Rajeshwari**

Department of Chemistry, Telangana University, Nizamabad, Telangana State-503322, India.

1-(2-trifluoromethan phenyl)-5-phenyl-1H-tetrazole from amide a mixture of 2-Trifluoromethyl aniline, sodium azide and zirconium oxychloride in dry acetonitrile with Reflux 43hr.



R=CF_3

scheme 1

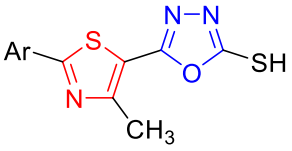
Paper-4	Heterocyclic Letters 14: iss.-2 (2024), 255-258

Synthesis and characterization of new thiazolyl 1,3,4-oxadiazole and 1,2,4-triazole derivatives.

Nirmala R. Darekar[a], Sujata G. Dengale[b], Kulbhushan A. Sasane[c], Shripad M. Patil[d], Hemantkumar N. Akolkar*[c]

[a]*Department of Chemistry, Radhabai Kale Mahila Mahavidyalaya, Ahmednagar, 414 001, Maharashtra, India.*
[b]*Department of Chemistry, S. N. Arts, D. J. Malpani Commerce and B. N. Sarda Science College, Sangamner, Dist. Ahmednagar, Maharashtra, 422 605, India.*
[c]*Department of Chemistry, Abasaheb Marathe Arts and New Commerce, Science College, Rajapur, Dist- Ratnagiri, 416 702, Maharashtra, India.*
[d]*Department of Chemistry, Dadapatil Mahavidyalaya, Karjat, Ahmednagar, 414 402, Maharashtra, India.*
E-Mail: hemantakolkar@gmail.com (Corresponding Author)

In the present study, we have synthesized new 5-(2-aryl-4-methylthiazol-5-yl)-1,3,4-oxadiazole-2-thiols **5** and 4-amino-5-(2-aryl-4-methylthiazol-5-yl)-4*H*-1,2,4-triazole-3-thiols **6**. All the newly synthesized compounds were characterized with the help of IR, ^{1}H NMR and Mass spectroscopic techniques.



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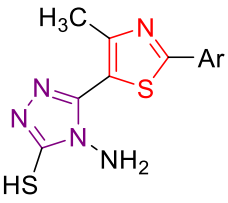

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Paper-5	Heterocyclic Letters 14: iss.-2 (2024), 259-265

Studies in designing of substituted 4h-pyrano [3,2-h]quinoline-3-carbonitrile Derivatives as potential neuraminidase inhibitors of swine flu in silico approach.

Prasanna B. Ranade[1]*, Dinesh N. Navale[1], Pramod P. Gaikwad[1] , Usama A. Anware[1] , Santosh W. Zote[2], Dnyaneshwar K. Kulal[3], Swapnil J. Wagh[4], Vaijayanti Ghase[5]

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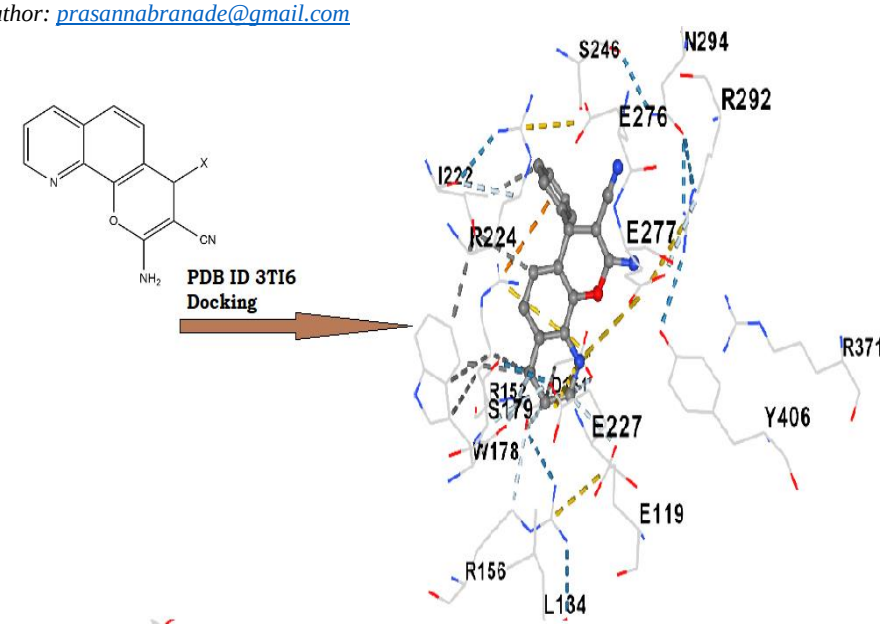
[2]Department of Chemistry, PTVA's Sathaye College (Autonomous), Dixit Road, Vile Parle (East), Mumbai-400 057, Maharashtra, INDIA.
[3]Department of Chemistry, Ramnarain Ruia Autonomous College, L. N. Road, Matunga,Mumbai-400 019, Maharashtra, INDIA.
[4]Department of Chemistry, R.S.S. Prasarak Mandal's Nanasaheb Yashvantrao Narayanrao Chavan, Arts, Science & Commerce College Chalisgaon, Jalgaon-424101Maharashtra, INDIA.
[5]Department of Chemistry, S.K. Somaiya College Vidyavihar, Ghatkopar Mumbai, INDIA
Corresponding author: prasannabranade@gmail.com



Paper-6	Heterocyclic Letters 14: iss.-2 (2024), 267-272

Indium-mediated reduction of aromatic nitro groups in β-lactams to oxazines

Aarif L. Shaikh[1], Aparna Das[2] and Bimal Krishna Banik[2*]

[1]Sai Life Sciences, DS-7, IKP Knowledge Park, Turkapally, Shameerpet, Medchal, 500078, Telangana, India; [2]Department of Mathematics and Natural Sciences, College of Sciences and Human Studies, Prince Mohammad Bin Fahd University, Al Khobar 31952, Kingdom of Saudi Arabia; Email: bimalbanik10@gmail.com

An indium-induced reduction of nitro-substituted β-lactams has been used for facile synthesis of oxazines in aqueous ethanol using ultrasound at 40°C through molecular rearrangement.

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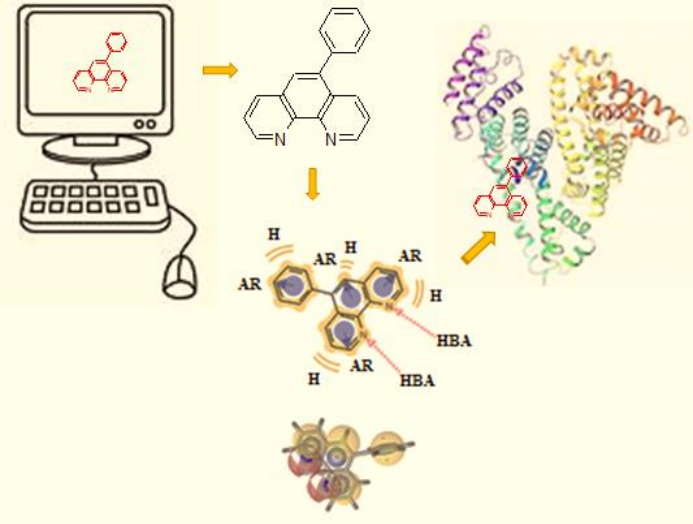
Paper-7	Heterocyclic Letters 14: iss.-2 (2024), 273-286

Physicochemical parameters involved in the interaction of some phenanthroline derivatives with janus kinase-3 protein using a theoretical model

Figueroa-Valverde Lauro[1*], Rosas-Nexticapa Marcela[2], Alvarez-Ramirez Magdalena[2], López-Ramos Maria[1], Mijangos-Sánchez Juliette[1].

[1]Laboratory of Pharmaco-Chemistry, Faculty of Chemical Biological Sciences, University Autonomous of Campeche, Av. Agustín Melgar s/n, Col Buenavista C.P. 24039 Campeche, Camp., México.



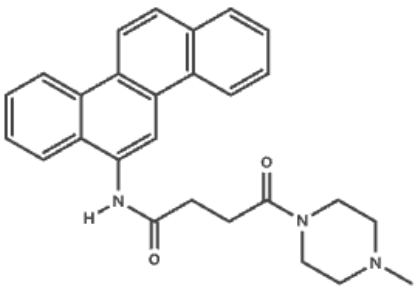
Paper-8	Heterocyclic Letters 14: iss.-2 (2024), 287-291

Dipole Moment Studies on Anticancer Polyaromatic Compounds

Aparna Das[1], Ram Naresh Yadav,[2] and Bimal Krishna Banik[1]*

[1]Department of Mathematics and Natural Sciences, College of Sciences and Human Studies, Prince Mohammad Bin Fahd University, Al Khobar, Kingdom of Saudi Arabia;[2]Veer Bahadur Singh Purvanchal University, Jaunpur-222003 (U.P), India; Email: bimalbanik10@gmail.com; bbanik@pmu.edu.sa

Dipole moment values of a few anticancer polyaromatic molecules is investigated.



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Paper-9	Heterocyclic Letters 14: iss.-2 (2024), 293-299

Novel Synthesis of Heterocyclic 1,3,4 Thiadiazole based bioactive Metal complexes

Ajay M Patil[1*],Chandrashekhar G. Devkate [2], Uddhav Chaudhar[3], Shyam Takle[4]

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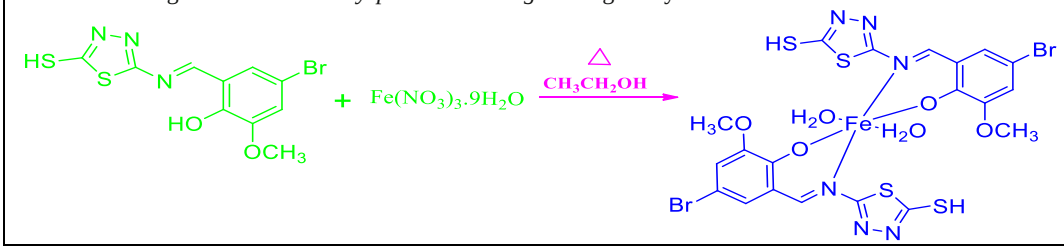
[2]Dept. of Chemistry,IndrarajArts,Com.andSci.College, Sillod, Chh.Sambhajinagar-431112, India
[3]Department of Chemistry, Kalikadevi Art's, Science & Commerce College, Shirur(Ka.),Beed,India*
[4]Department of Chemistry, S.D.College Soegaon,Chh.Sambhajinagar-431120,India
E-mail authors: patilam4@gmail.com

Novel Heterocyclic 1,3,4 ThiadiazoleFe (III) Complexes were prepared. Metal Complexes were prepared from ligand 4-bromo-2-(((5-mercapto-1,3,4-thiadiazol-2-yl)imino)methyl)-6-methoxyphenol with $Fe(NO_3)_3.9H_2O$ (Iron Nitrate). Structures of complexes were confirmed based on different spectroscopic techniques like elemental analysis, FT-IR, UV-Vis, magnetic and molar conductivity measurements.All complexes were non-electrolytes and had octahedral geometry. Investigation of bioactivity for complexes and ligands exposed their moderate antibacterial activities tested *in vitro* against bacterial Strains*S.aureus*and*B. subtilis* and fungal strains of *F. Oxysporum*and*A. Niger* using Kirby-Bauer disc diffusion method.



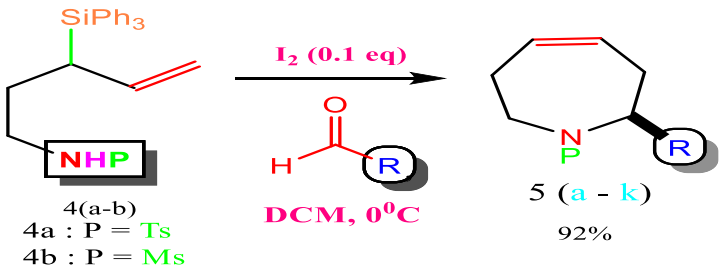
Paper-10	Heterocyclic Letters 14: iss.-2 (2024), 301-308

Molecular Iodine Catalysed Synthesis Of Tetrahydroazepines Frameworks *Via* Silyl Aza-Prins Cyclization

N. Prudhvi Raju[a*], R. L. Satyanarayana[b], D. Ravikumar[c], K. Pavan Krishna[d]

[a]Department of Chemistry, B.V. RAJU College, Bhimavaram, AP-534202, India.
**Corresponding Author E-mail : prudhvi115@gmail.com*

Based on the powerful Aza-Prins cyclization in combination with the Peterson-type elimination reaction,. a C–N, C– C bond and an endocyclic double bond are formed. Under mild reaction conditions ,using Molecular Iodine as sustainable catalysts, tetrahydroazepines with different degrees ofsubstitution are obtaineddirectly and efficiently



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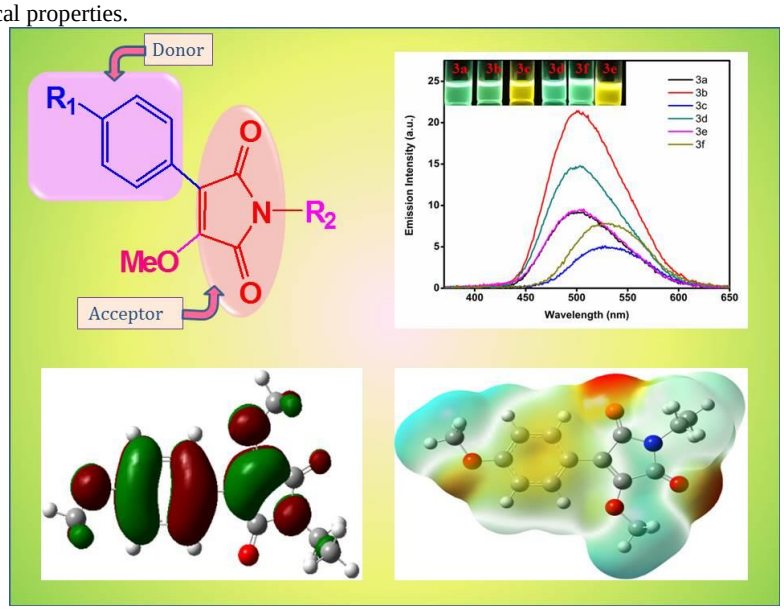
Paper-11	Heterocyclic Letters 14: iss.-2 (2024), 309-317

Maleimide Based Donor-Acceptor Fluorophore: Microwave Assisted Green Synthesis, Photophysical and DFT Study

Kirankumar S. Gosavi

Department of Chemistry, KVPS's Kisan Arts, Commerce and Science College, Parola, Dist: Jalgaon, Maharashtra, India. Pin: 425111
Email-id: kirangosavi08@gmail.com
ORCID ID: 0000-0003-2143-06

This paper deals with green synthesis of 3-aryl 4-methoxy maleimide derivatives, using microwave irradiation method to attribute its photophysical properties.



Paper-12	Heterocyclic Letters 14: iss.-2 (2024), 319-327

Synthesis and characterization of chromium (iii) complexes of p-vanillin semicarbazone and thiosemicarbazone

Mukta Sharma[1]

Department of Chemistry; Vivekanand College of Education, Roorkee (Haridwar), Uttrakhand (India)

Chromium (III) complexes of p-vanillin semicarbazone (L^1) and thiosemicarbazone(L^2) have been synthesized. These complexes were characterized by elemental analysis, molar conductance, magnetic moment, IR, electronic and epr spectral studies. Complexes were found to have Cr ($L_1$and L_2)$_2$ X_3 Composition. Molar conductance indicates that chloro complexes are 1:1 whereas nitrato complexes are 1:2 electrolyte in nature. Both the ligands act as bidentate. On the basis of spectral studies an octahedral geometry has been assigned for all the complexes.

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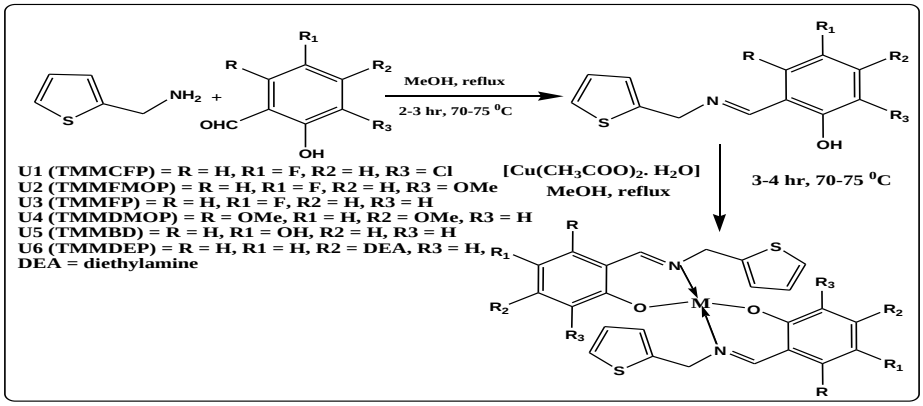
Paper-13	Heterocyclic Letters 14: iss.-2 (2024), 329-352

Cu(II) complexes of derivatives of (thiophen-2-yl)methanamine: Design, Synthesis, Spectral characterization, DNA binding investigations and antimicrobial activity.

S. Udaya Laxmi [a], N Nageswara Rao [a], P. Ettaiah [a]*

[a] *Department of Chemistry, University college of Science, Osmania University, Hyderabad, Telangana.*
Email Id: udayasalluri2@gmail.com

The synthesis and characterization of six new Schiff base ligands, including the imine ligands TMMCFP, TMMFMOP, TMMFP, TMMDMOP, TMMBD, and TMMDEP, as well as their complexes with 3D series copper metal, included elemental analyses, ^{1}H, ^{13}C NMR, IR, ESI mass, UV-Visible, ESR, magnetic moment, and TGA investigations. A square planar shape is ascribed to the Cu (II) compounds based on the findings from the studies to surround the metal ion. Using UV-visible electronic, fluorescence, and viscosity studies, the interaction of synthesized metal complexes with calf thymus Deoxyribonucleic acid (CT-DNA) was investigated.

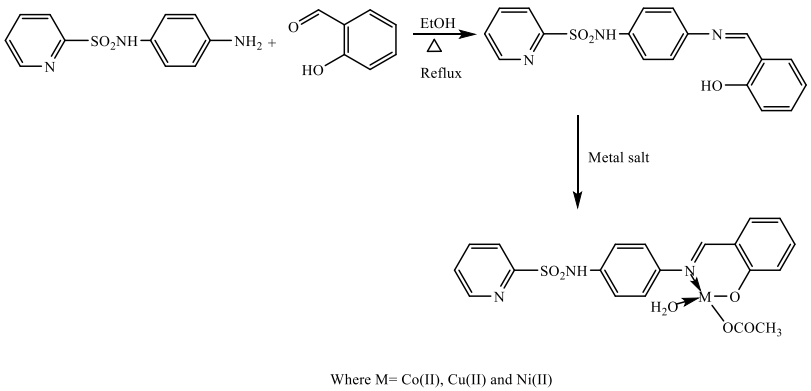


Paper-14	Heterocyclic Letters 14: iss.-2 (2024), 353-361

Synthesis, spectral and thermal studies of Schiff bases derived from N-(4-((2-hydroxybenzylidene) amino) phenyl) pyridine-2-sulfonamide

V. A. Sadafale*

**Department of Chemistry, Adarsha Science, J. B. Arts & Birla Commerce Mahavidyalaya, Dhamangaon Rly, Amravati, India*
Corresponding authors email: vasadafale1980@gmail.com



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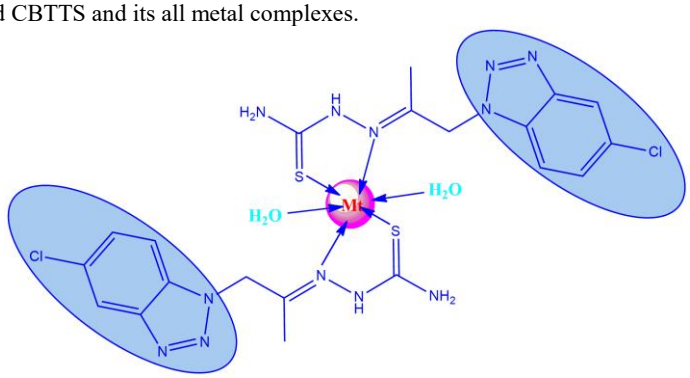
Paper-15 | Heterocyclic Letters 14: iss.-2 (2024), 363-372

Study of Novel Metal Complexes of Thiosemicarbazones

Sandip D. Patel, Mohit R. Joshi, Dr. Harshad Kumar P. Patel

Sankalchand Patel University, Visnagar-384315
sandippatel77790@gmail.com

The novel metal complexes of heterocyclic ligand,i.e., 2-(1-(5-chloro -1H-benzo[d] [1,2,3] triazol-1-yl)propan-2-ylidene) hydrazine carbothioamide **(CBTTS)** were synthesized from reaction between novel ligand with selected Transition Metal salts. The novel metal complexes characterized for their elemental contents, Spectral studies, metal: ligand ratio and magnetic properties of novel ligand and their metal complexes, which are confirmed the predicted structure and best antibacterial and antifungal activities of ligand CBTTS and its all metal complexes.



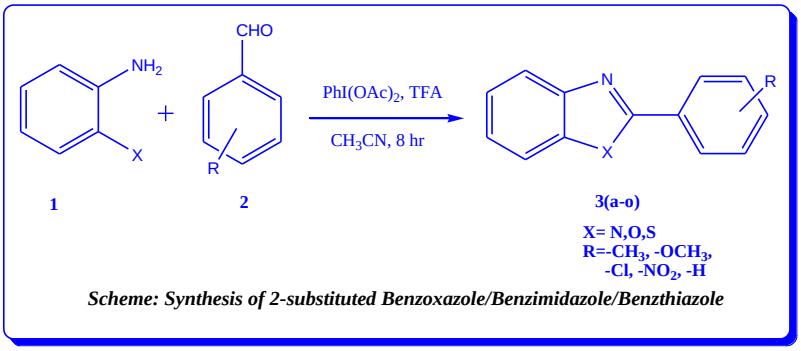
Paper-16 | Heterocyclic Letters 14: iss.-2 (2024), 373-383

One-pot synthesis of 2-substituted benzoxazole/benzimidazole/Benzothiazoles using (diacetoxyiodo)benzene (DIB)as an efficient catalyst

A. Venkateswarlu[1], M. Hari Krishna[1], P. Thriveni*[1]

[1]*Department of Chemistry, Vikrama Simhapuri University, Nellore-524320, A.P., India.*
***Corresponding Author E-mail**: pthriveni@vsu.ac.in*

Using DIB as a catalyst in CH_3CN, we reported the synthesis of 2-substituted benzoxazole/benzimidazole/benzothiazoles. This approach greatly increases its utility of as a special and potent tool in chemical synthesis. This technique offers a novel approach to the synthesis of diverse benzoxazole, benzimidazole, and benzothiazole derivatives using various aldehydes and o-substituted amino aromatics. This technique gives good to exceptional yields of products and is relatively simple to build up. Following the reaction, the products were examined by mass spectroscopy, infrared spectroscopy, and NMR.



Scheme: Synthesis of 2-substituted Benzoxazole/Benzimidazole/Benzthiazole

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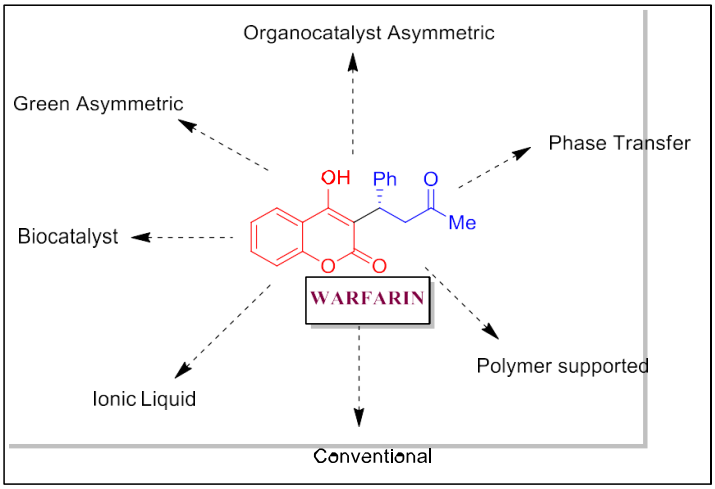
Paper-17	Heterocyclic Letters 14: iss.-2 (2024), 385-406

Synthesis of Warfarin

Vrushali Madhukar Panchal[a] and Vandana M. Kamble[b]*

[a]*Department of Chemistry, The Institute of Science, Dr. Homi Bhabha State University, Mumbai- 400032 Maharashtra, India.*
[b,*] *Department of forensic Science, The Institute of Science, Dr. Homi Bhabha State University, Mumbai- 400032 Maharashtra, India. vrushmpanchal@gmail.com*

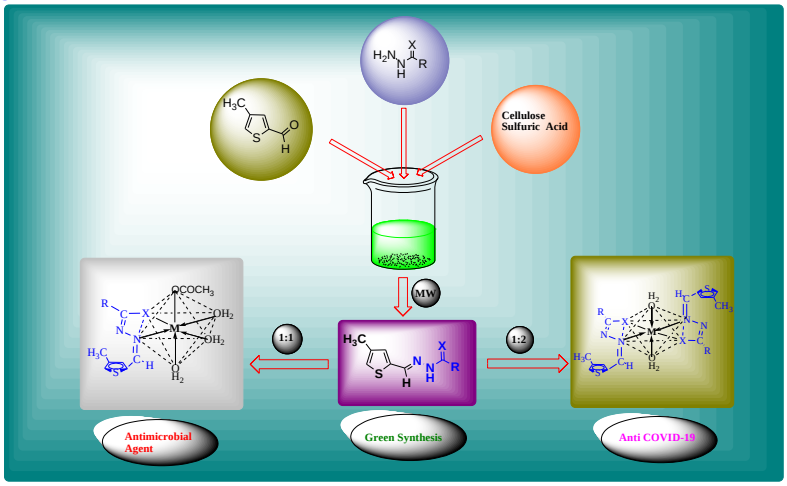


Paper-18	Heterocyclic Letters 14: iss.-2 (2024), 407-422

Biologically potent novel heterocyclic azomethines and their co (ii) metal complexes: green synthesis, characterization and molecular docking studies with sars-cov-2 main protease 6lu7

Arghya De[a], Ritu Tomar[a*]

[a]*Department of Chemistry, Bhupal Noble's University, Udaipur-313001, India*
E-mail: ritutomarbnu@gmail.com



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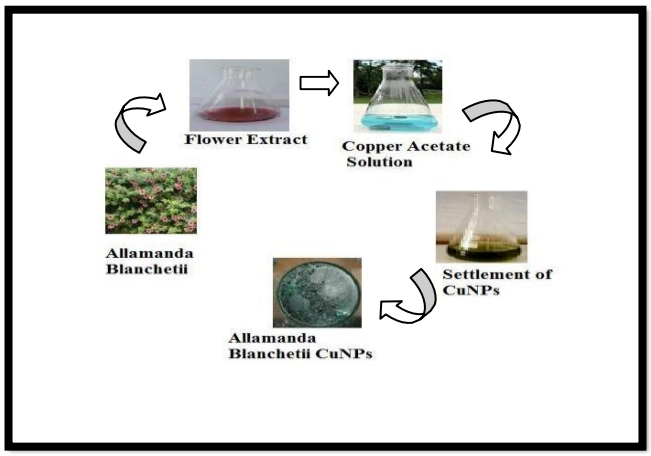
Paper-19	Heterocyclic Letters 14: iss.-2 (2024), 423-430

Green synthesis and characterization of copper nanoparticles using allamanda blanchetii flower extract

T. Sahaya Maria Jeyaseeli[a]*, Angelin Pushpa.B[b]

[a]*Assistant Professor , Department of Nano science, Sarah Tucker College, (Autonomous) Tirunelveli - 627 007, affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India.*
[b]*Assistant Professor, Department of Nanoscience, Sarah Tucker College, (Autonomous) Tirunelveli - 627 007, affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India.*
**Corresponding author E-mail: jeyaseelit3@gmail.com*
Mobile Number: 9443485573

The Allamanda Blanchetii flower extract is used for the biosynthesis of Coppernanoparticles and the successful formation of the resultant product was confirmedthrough several physicochemical techniques. The crystalline structure and crystallite size were investigated through an X-ray diffractometer (XRD). The antioxidant test is also carried out against 1,1-diphenyl -2- picrylhydrazyl freeradicals and the antioxidant potential of CuNPs were found to be higher than ascorbic acid



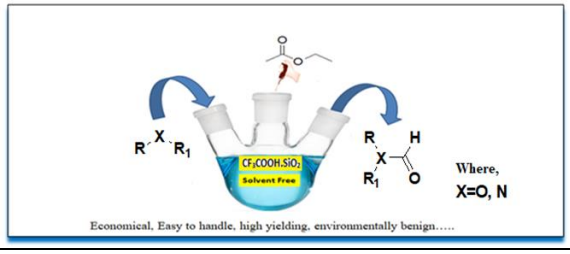
Paper-20	Heterocyclic Letters 14: iss.-2 (2024), 431-442

. **CF3SO3H.SiO2 Catalyzed, Solvent Free, 'N' and 'O' Formylation of Amines, Anilines Alcohols and Phenols"**

Shrikrishna G More[1], Mahesh P More[2], Parimeeta Chanchani [3]*

[1,3] Department of chemistry, Mansarovar Global University, Sehore, (M.P.), India.*
[2] Department of chemistry, Dr. A.P.J.Abdul Kalam University, Indore, (M.P.), India.
**Corresponding author: E-mail: parimeetac@gmail.com*

Ethyl Methanoate has been successfully employed as an 'N' and 'O' formylating agent in a straightforward way in presence of catalytic amount of $CF_3SO_3H.SiO_2$. This methodology is solvent free and economical for the synthesis of formamides and formats. The methodology tolerates different aromatic and aliphatic amines, anilines and phenols offering well to excellent yield of the intended products within short reaction time. Late stage synthesis of formates and formamides also feasible using this methodology.



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Paper-21	Heterocyclic Letters 14: iss.-2 (2024), 443-448

Synthesis, characterization, & antimicrobial screening of N-thiadiazolyl thiazolidinone derivatives

Vijay V. Dabholkar* and Dinesh Udawant [#], Rahul Jaiswar[#]

Organic Research Laboratory, Department of Chemistry,
**Jai Hind College, Church gate, Mumbai-400 020,*
[#] K.C. College, Church gate, Mumbai-400 020, INDIA.
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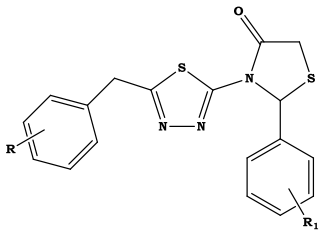
A new series of 2-(5-(substitutedbenzyl)-1,3,4-thiadiazol-2-yl)-(substitutedphenyl)- thiazolidin-4-one (5) have been synthesized by the reaction of Schiff base of 2-amino-5-(substituted)-benzyl-1,3,4-thiadiazole (3) with α-mercaptoalkanoic acid (4) in glacial acetic acid. The structures of the compounds have been confirmed by IR, NMR and Mass Spectroscopy. Representative compounds were screened for their anti-microbial activity against gram-negative bacteria, E coli and P.aeruginosa and gram-positive bacteria, S aureus, and C diphtheriae using disc diffusion method. Some of these compounds have been found to exhibit excellent antibacterial activity.



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PERSPECTIVES

Perspectine No.1	Heterocyclic Letters 14: iss.-2 (2024), 449-456

Microwave in Research-More Miracles

Aparna Das* and Bimal Krishna Banik*

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This perspective describes the future possible trends in microwave research. As an example, future trends in organic and inorganic chemistry, material science, biochemistry, flow chemistry, communication, earth science, the food industry, and medicinal chemistry are considered.

Heterocyclic Letters
Vol. 14| No.2|220-233|Feb-April|2024
ISSN : (print) 2231–3087 / (online) 2230-9632
CODEN: HLEEAI
http://heteroletters.org

Perspectine No.2	Heterocyclic Letters 14: iss.-2 (2024), 457-467

Expeditious Synthesis of Oxygen and Sulfur Heterocycles by Microwave

Aparna Das* and Bimal Krishna Banik*

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The oxygen- and sulfur-containing heterocyclic compounds are important compounds due to their diverse medicinal activities. Microwave-induced reactions were performed for the preparation of O-heterocycles and S-heterocycles as environmentally benign, fast, high yielding and economical methods.

REVIEWS

Review No.1	Heterocyclic Letters 14: iss.-2 (2024), 469-477

An Review on protozoan parasite *leishmania donovani*

Ankita Agarwal[a]*

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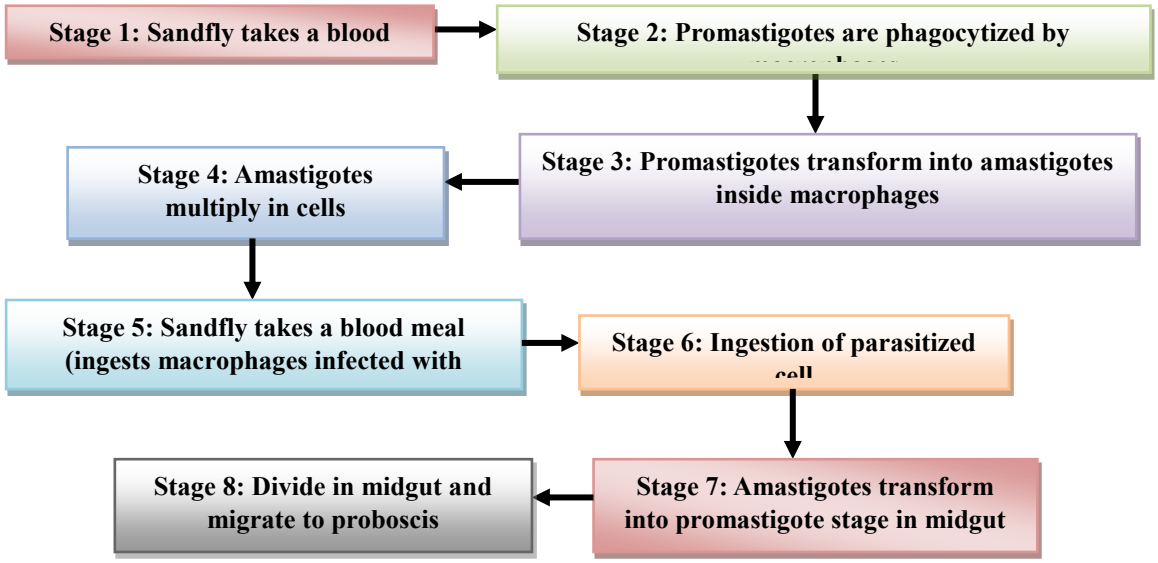
**Corresponding Author*

Sandfly stages which are responsible for leishmaniasis infection in the mammal host



Heterocyclic Letters
Vol. 14| No.2|220-233|Feb-April|2024
ISSN : (print) 2231–3087 / (online) 2230-9632
CODEN: HLEEAI
http://heteroletters.org

Review No.2	Heterocyclic Letters 14: iss.-2 (2024), 479-492

2-[Bis(methylthio)methylene]malononitrile: A Versatile Reagent in the Diversity-Oriented Synthesis of Complex Heterocyclic Scaffolds

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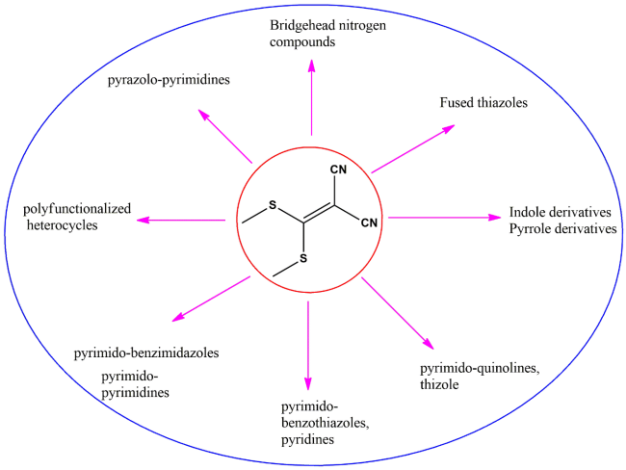
2-[Bis(methylthio)methylene]malononitrile extensively applied as a synthon in the diversity-oriented synthesis of diverse heterocyclic compounds. These include mono/polycyclic-heterocyclic compounds, fused heterocyclic compounds, bicyclic bridged nitrogen, sulphur, oxygen-containing heterocycles, substituted heterocycles, and pyrimido-heterocycles. These compounds are synthesized via various reactions, such as cyclo-condensation, cyclo-addition, cascade reactions, and multi-component reactions. The compound's versatility and high reactivity as a multi-functional reagent stem from its easily available structure, featuring electron-withdrawing two cyano functional groups, two methylthio as the best leaving groups, and an α, β-unsaturated alkene part. Its unparalleled potential for crafting complex and functional heterocyclic frameworks has prompted us to compile a comprehensive review on the synthetic utility of 2-[Bis(methylthio)methylene]malononitrile, highlighting its role as a potent reagent in the synthesis of heterocyclic scaffolds.



Heterocyclic Letters
Vol. 14| No.2|220-233|Feb-April|2024
ISSN : (print) 2231–3087 / (online) 2230-9632
CODEN: HLEEAI
http://heteroletters.org

Review No.3	Heterocyclic Letters 14: iss.-2 (2024), 493-506

Piperidine scaffold drugs and their medicinal applications

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Piperidine containing compounds represents one of the most important synthetic medicinal block for drug synthesis as, it has many biological applications. This review article discusses the various naturally occurring and synthetic piperidine derivatives with applications.