Heterocyclic Letters
Vol. 12| No.2 |226-238| February-April |2022
ISSN : (print) 2231–3087 / (online) 2230-9632
CODEN: HLEEAI
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Graphical abstract

Paper-1	Heterocyclic Letters 12: iss.-2 (2022), 239-242

Preparation of a bis-MEM-ascorbicc acid-lipoic acid conjugate

Rasidul Amin* and David A. Hunt**

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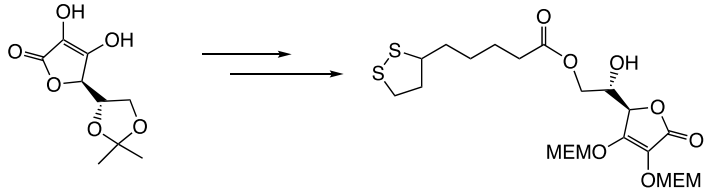

Paper-2	Heterocyclic Letters 12: iss.-2 (2022), 243-251

Synthesis of two amide derivatives with biological activity against some bacteria strains

Figueroa-Valverde Lauro[1,*], Díaz-Cedillo Francisco[2], Rosas-Nexticapa Marcela[3,*], López-Ramos Maria[1], Alvarez-Ramirez Magdalena[3], Mateu-Armad Maria Virginia[3], Cervantes-Ortega Catalina[3], Lopez Gutierrez Tomas[1]

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[2] Escuela Nacional de Ciencias Biológicas del Instituto Politécnico Nacional. Prol. Carpio y Plan de Ayala s/n Col. Santo Tomas, México, D.F. C.P. 11340;
[3] Facultad de Nutrición, Universidad Veracruzana, Médicos y Odontologos s/n C.P. 91010, Unidad del Bosque Xalapa Veracruz, México;
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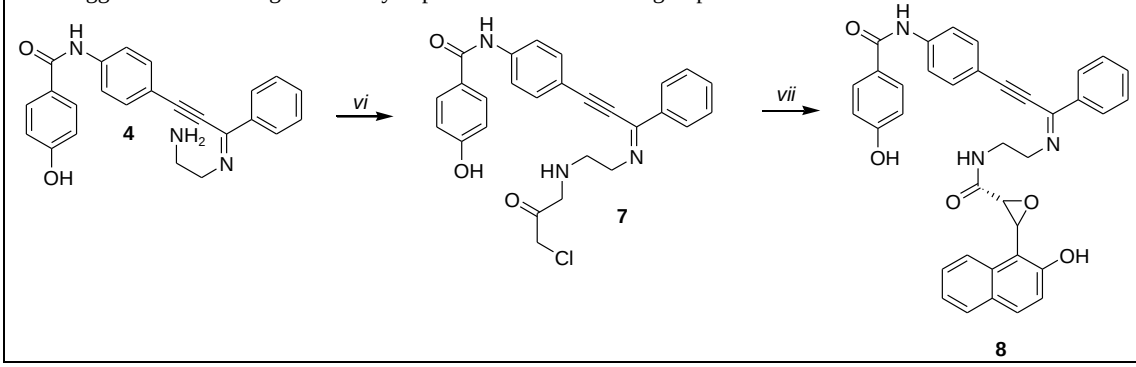
Several amide derivatives have been prepared as antibacterial agents; however, some methods used involve different reagents which can be dangerous and require special conditions such as different pH and higher temperatures. The aim of this study was synthesize two amide derivatives (compounds **7** and **8**) using some chemical strategies to evaluate their biological activity against some bacteria. The chemical structure of compounds involved in this studywas confirm with both ^{1}H and ^{13}C NMR spectra. Other data showed that compound **7** decreased bacterial growth of all bacterial strains compared to compound **8**;. These data suggest that the biological activity depends on the functional groups involved in the chemical structure of **7**.



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Paper-3	Heterocyclic Letters 12: iss.-2 (2022), 253-256

Microwave-Induced Stereoselective Synthesis of β-lactams Containing Aromatic Carboxylic Acids

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

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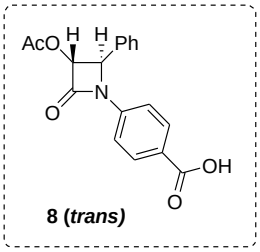
Email: bimalbanik10@gmail.com



8 (*trans*)

Paper-4	Heterocyclic Letters 12: iss.-2 (2022), 257-269

Synthesis, Experimental and Theoretical Characterization of N-(ferrocenyl methyl) Ortho, Meta and Para Diamine Benzene prepared by reduction of ferrocenylmethyl nitroaniline with PHMS as a Source of Hydrogen and TBAF as catalyst

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[2] Water and environmental engineering in the Saharan environment Laboratory,, Process Engineering Department, Faculty of Applied Sciences, University Kasdi Merbah, Ouargla 30000, Algeria.
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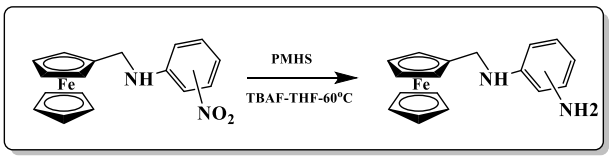
In this work, we have attempted to synthesize, characterize three amino ferrocenic compounds: N-(ferrocenylmethyl)-1,2-diamine benzene, N-(ferrocenylmethyl)-1,3-diamine benzene and N-(ferrocenylmethyl)-1,4-diamine benzene by reduction respectively of N-(ferrocenylmethyl)-2-nitroaniline, N-(ferrocenylmethyl)-3-nitroaniline and N-(ferrocenylmethyl)-4-nitroaniline and evaluate their QSAR's properties.



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Paper-5	Heterocyclic Letters 12: iss.-2 (2022), 271-279

An Alternative Route to the Synthesis of 2-Methyl-N-Benzimidazole Glycosides and Antibacterial Activity

Nawal Chaouch[a,c], Khaled El-Miloudi[b*], Adil Ali Othman[a], and Mohamed Karmaoui[c]

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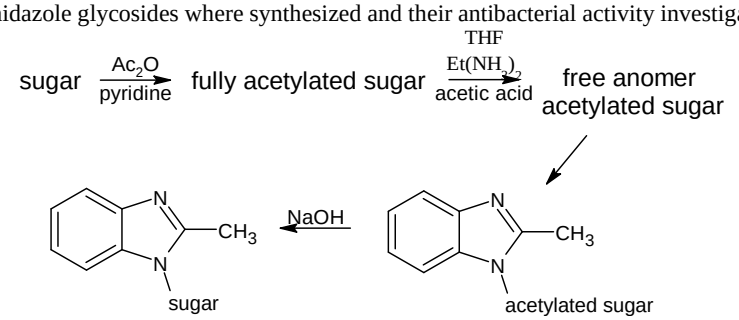
[b]*Laboratoire Physique Théorique et Physique des Matériaux, Faculté de Technologie, Université Hassiba Benbouali de Chlef, Algérie;*
[c]*Laboratoire de Chimie Physique,Département de Génie Chimique, Université des Sciences et de la Technologie d'Oran-Mohamed Boudiaf-USTO-MB, Algérie*
**Corresponding author email: k.elmiloudi@univ-chlef.dz*

Three 2-methyl-N-benzimidazole glycosides where synthesized and their antibacterial activity investigated.



Paper-6	Heterocyclic Letters 12: iss.-2 (2022), 281-293

Synthesis and antibacterial screening of imidazole anchored pyrazolines, benzodiazepines and chromones

Rajendra Deshmukh[a], Bhausaheb Karale[a], Nirmala Darekar[a], Pratibha Randhavane[b], Hemant kumar Akolkar[c,*]

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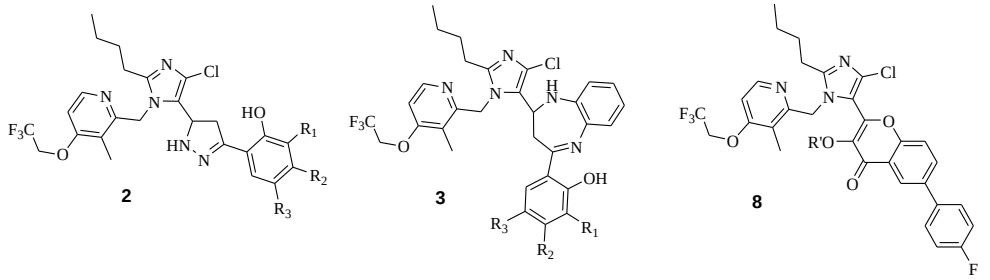
[b]*Department of Chemistry, S. S. G. M. College, Kopargaon, 423 601, Maharashtra, India.*
[c]*Department of Chemistry, Abasaheb Marathe Arts and New Commerce, Science College, Rajapur, Dist- Ratnagiri, 416 702, Maharashtra, India.*

Imidazole anchored chalcones were converted into pyrazolines, benzodiazepines, chromones, chlorochromones and hydroxychromones. 3-*O*-alkylated-6-(4-fluorophenyl)chromones were synthesized from 3-*O*-alkylated-6-bromochromones by Suzuki-Miyaura Reaction. Formation of the target compounds was confirmed by spectral techniques. The newly synthesized compounds were studied for their antibacterial potential using bacterial strains *Bacillus Subtilis* and *Escherichia Coli*.



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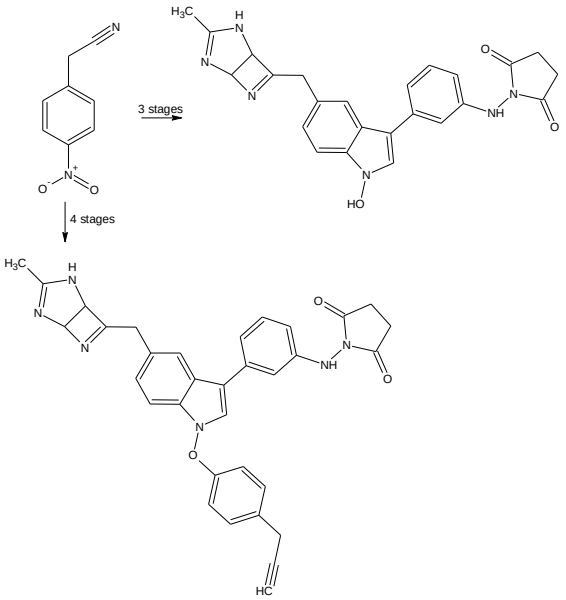
Paper-7	Heterocyclic Letters 12: iss.-2 (2022), 295-303

Synthesis of two *pyrrolidine-2,5-dione* derivatives as antibacterial agents

López-Ramos Maria, Figueroa-Valverde Lauro, Díaz-Cedillo Francisco, Rosas-Nexticapa Marcela, Alvarez-Ramirez Magdalena, Mateu-Armad Maria Virginia, Lopez Gutierrez Tomas, Moo-Kuc Cristina.

Laboratory of Pharmaco-Chemistry at the Faculty of Chemical Biological Sciences from the University Autonomous of Campeche,

In this study is reported a straightforward route for synthesis of two pyrrolidine-2,5-dione derivatives as antibacterial agents. The structure of the compounds obtained was confirmed by elemental analysis, spectroscopy, and spectrometry data.



Paper-8	Heterocyclic Letters 12: iss.-2 (2022), 305-309

Willgerodt Kindler Rearrangement – a convergent method to manage sulfur heterocycle

D. Shiamala Devi[a], S. Ilayaraja[a], P. Pitchai[a*] and R. M. Gengan[b]

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[b]Department of Chemistry, Steve Biko Campus, Durban University of Technology, Durban, 4001, KwaZulu-Natal, South Africa.
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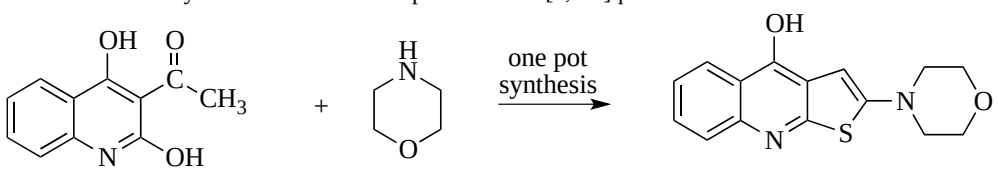
A one-pot synthesis of 2-morpholinothieno[2,3-*b*]quinolin-4-ol is reported. Benchtop reagents of general organic chemical laboratories are used to produce the target molecules. However the synthetic approach is unusual; the Willgerodt Kindler rearrangement and a subsequent dehydration reaction is utilized to generate a new heterocyclic ring. FT-IR, ^{1}H-NMR and ^{13}C-NMR spectra are used to identify the structure of 2-morpholinothieno[2,3-*b*]quinolin-4-ol.



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Paper-9	Heterocyclic Letters 12: iss.-2 (2022), 311-319

An efficient and recyclable ionic-liquid catalyzed, synthesis of 4-hydroxy-2h-chromen-2-one derivatives.

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[b]Department of Chemistry, Indraraj Arts, Commerce and Science College, Sillod (Aurangabad)-431112 (MS) India
[c]Department of Chemistry, Vasantrao Naik Mahavidyalaya, Aurangabad -431001 (MS) India
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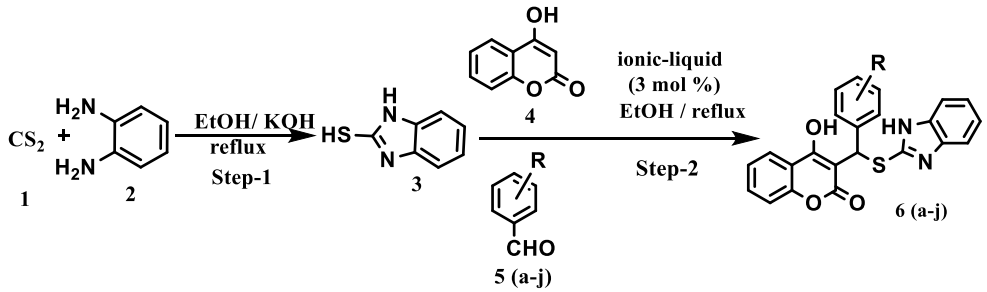
A simple, efficient and environmentally benign one pot three component protocol has been developed for the synthesis of 4-hydroxy-2H-Chromen-2-one derivatives by a reaction of 4-hydroxycoumarin, substituted aryl aldehyde, and 2-mercaptobenzimidazole using catalytic amount of ionic liquid under reflux in ethanol. The protocol has been utilized mild reaction condition, excellent yield, shorter reaction time, recyclability of the catalyst and work-up procedure is fairly simple.



Paper-10	Heterocyclic Letters 12: iss.-2 (2022), 321-328

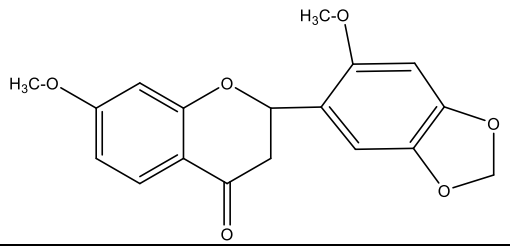
Constitution and Synthetic Study Of a Flavanone Lannea Acida Pigment –A

Rekha Kashyap[1], Ram Babu Pachwarya[1]*, Euis Nurul Hidaya[2], Pramod Kumar Meena[3], Rekha Sharma[4]

1. *Department of Chemistry, Motilal Nehru College, Delhi University, BJM Dhaula Kuan, New Delhi India 110021*
2. *Department of Environmental Engineering, University of Pembangunan Nasional Veteran Jawa Timur, Surabaya, Indonesia*
3. *Department of Chemistry, Government Bangur College Didwana (Nagaur) Rajasthan, India – 341303*
4. *Department of Chemistry, Banasthali Vidyapith, Rajasthan-304022, India*

**Corresponding Author: Email Address: rbpchem@gmail.com*

Constitution of a new flavanone lannea acida pigment A has been been confirmed by its synthesis as 7,2′ –dimethoxy - 4′ , 5 ′-methylenedioxyflavanone .It was further proved by PMR , CMR , UV and other reactions .It utilised 2 ′ –hydroxy -4 ′, 2 –dimethoxy-4,5 –methylenedioxychalcone as an essential intermediate .Moreover , a new and convenient synthesis of 3,4 –Methylenedioxyphenol (Sesamol) and its derivatives was carried out which was utilized to synthesise this chalcone which when refluxed with alcoholic sulphuric acid gave this Flavanone –Lannea Acida Pigment A



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Paper-11 | Heterocyclic Letters 12: iss.-2 (2022), 329-338

One-Pot Three-Component Synthesis of chromeno[4,3-c] pyrazol carbothioamide and chromeno[4,3,2-cd]indazol carbothioamide derivatives using *piperidine*s as an efficient catalyst

Malika Leguil[1*], Mokhtar BoualemLahrech[1*], Lahcene Souli[1] and Mokhtar Benalia [2]

[1]*Laboratory of Organic Chemistry and Natural Substances, Faculty of Exact Sciences and informatics, Ziane Achour University-Djelfa, Algeria.*
[2]*Laboratory of Process Engineering,Departement Process EngineernigAmar Telidgi-University, Laghouat, Algeria.*

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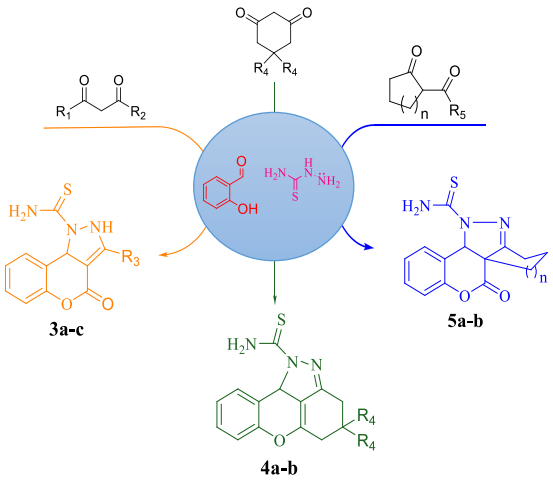
A green, efficient, and rapid procedure for the one-pot synthesis of novel chromeno[4,3-c]pyrazole carbotioamide and chromeno[4,3 ,2-cd]indazole-1- derivatives from salicylaldehyde, 1,3-dicarbonyl compounds and 2-aminobenzimidazole, under reflux conditions catalyzed by piperidine in acetic acid. The reactions are realized in short time (12h) giving an excellent yield (55-98%).The novel synthesized chromeno[4,3-c]pyrazole carbotioamide and chromeno[4,3 ,2-cd]indazole-1- derivatives were characterized by FT-IR, ^{1}H NMR and ^{13}C NMR spectroscopic techniques.



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Paper-12 | Heterocyclic Letters 12: iss.-2 (2022), 339-352

Synthesis and characterization of *N*-hydroxy-7-(3-substitutedureido)-4-(4-((4-(morpholinomethyl)phenyl)ethynyl)phenyl) -1,8-naphthyridine-2-carboxamides:a novel class of potential antibacterial, antifungal and anthelminthic agents

V. Kamala Prasad[a], P. Sanjeeva[b], G. Manjunath[b], B. Subba rao[b] and P. Venkata Ramana[*b]

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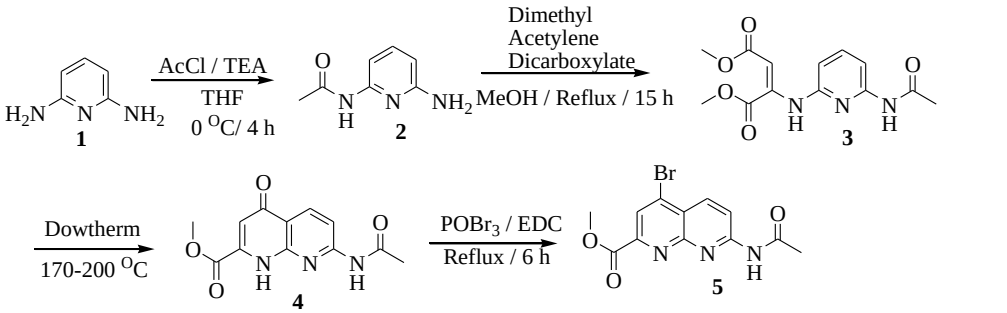
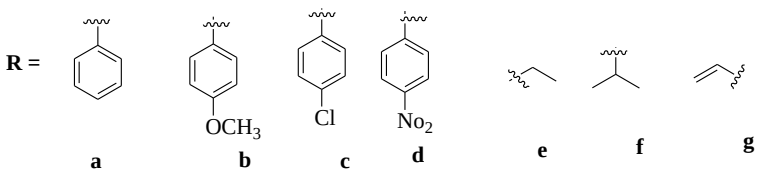
N-hydroxy-7-(3-substitutedureido)-4-(4-((4-(morpholinomethyl)phenyl)ethynyl) phenyl)-1,8-naphthyridine-2-carboxamides were synthesized by treating Methyl 7-(3-substitutedureido)-4-(4-((4-(morpholinomethyl)phenyl)ethynyl) phenyl)-1,8-naphthyridine-2-carboxylate with hydroxyl amine in ethanol/THF. These newly synthesized 1,8-naphthyridine derivatives were screened for their antibacterial, antifungal and anthelmintic activities against the respective strains. The results showed that introduction of electron donating groups in the ureido moiety results in a significant decrease of antimicrobial activity and an increase in anthelmintic activity.





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Paper-13 | Heterocyclic Letters 12: iss.-2 (2022), 353-362

Study of catalytic perspectives of DABCO based acidic ionic liquid for the synthesis of 2-phenyl-1,3-dithiolane

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[b]*School of Chemical Sciences, Swami Ramanand Teerth Marathwada University Nanded-431606, Maharashtra, India.*
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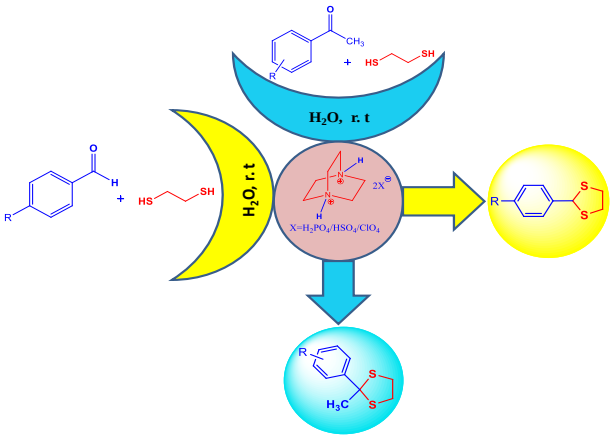

Paper-14 | Heterocyclic Letters 12: iss.-2 (2022), 363-371

Nano crystalline cufe$_2$o$_4$ catalyzed domino heterocyclization of pyrano- fused benzothiazolopyrimidines

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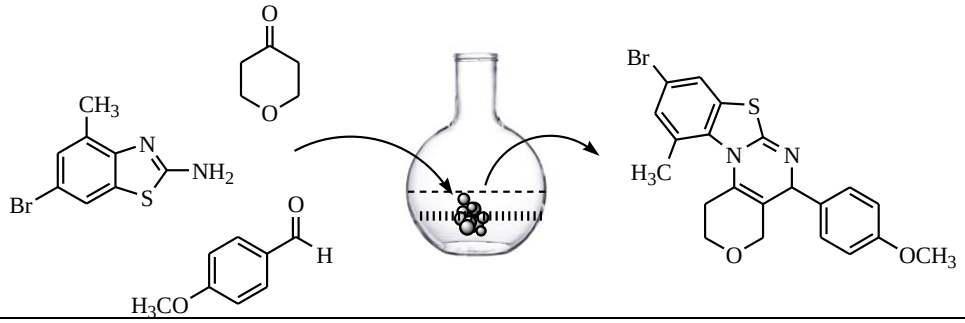
An efficient and facile, one-pot domino heterocyclization of structurally diverse pyrano- fused benzothiazolopyrimidines derivatives have been achieved. The Nano sized $CuFe_2O_4$ have employed as potential catalyst for the synthesis of functionalized benzothiazolopyranopyrimidines derivatives for the one-pot three component reaction of tetrahydropyran-4-one with 2-aminobenzothiazole and aryl aldehydes in aqueous ethanol under environment benevolent condition. The combination of magnetic nano-catalyst and multicomponent reactions have ideally satisfied the development of sustainable methods in green synthetic chemistry.



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Paper-15	Heterocyclic Letters 12: iss.-2 (2022), 373-379

Synthesis, Characterization and Antimicrobial Screening of Some Newly Synthesized Isoxazoline Derivatives

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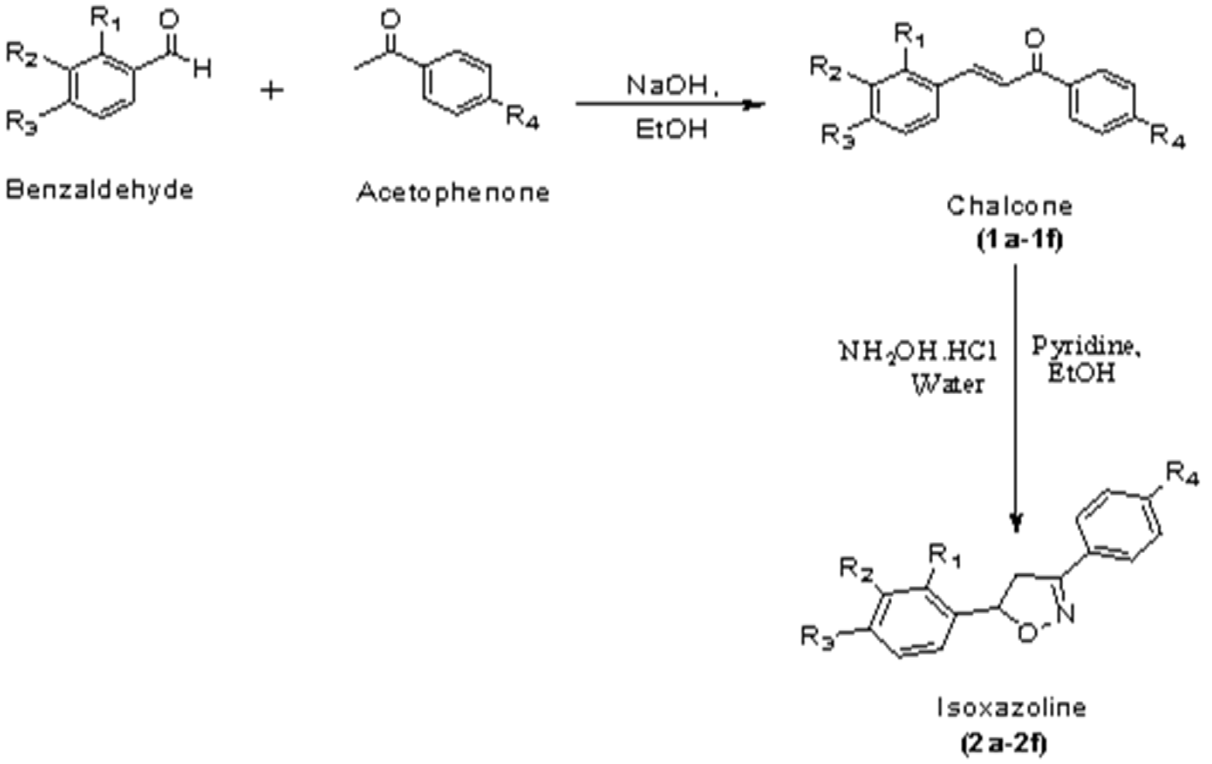
we have synthesized some analogues of 3-(4-subtituted phenyl)-5-substituted isoxazoline form 1-(4-substitutedphenyl)-3-substituted chalcones. The newly synthesized compounds were assayed for their antimicrobial activity against some bacteria *viz. Staphylococcus aureus, Enterococci, Escherichia coli, Pseudomonas aeruginosa* some fungi *viz. Candida albicans, Aspergillus niger.*

Scheme of synthesis



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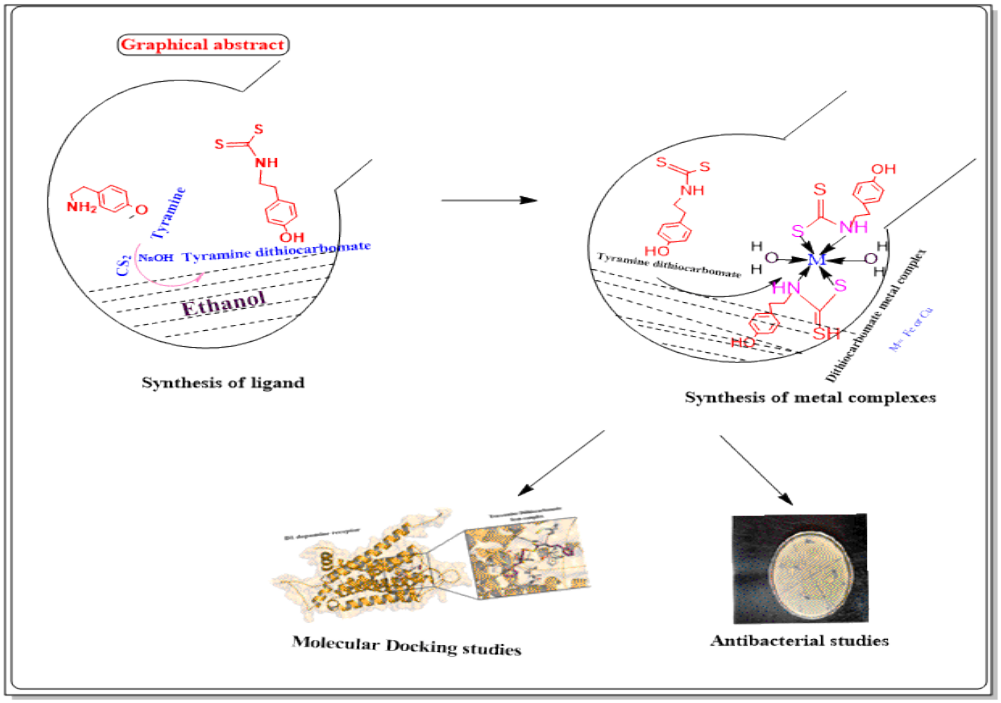
Paper-16 | Heterocyclic Letters 12: iss.-2 (2022), 381-393

Synthesis, characterisation, antibacterial and docking studies of copper and iron tyramine dithiocarbamate metal complexes

P. Malleswarareddy[1*], Vani Madhuri Velavalapalli[2], Nadipineni .Nagaraju[1] , Shravya pachipulusu[2] and Kakarla Meghana Reddy[3]

[1&3]Department of Chemistry, Sri Krishnadevaraya University, Anantapuramu, Andhra, Pradesh, India 515003.
[2]Department of chemistry GITAM University, Rudraram village, Hyderabad, Telangana, India
***[*]Corresponding author:**pmeshvarreddy@gmail.com.*

Tyramine dithiocarbamate Metal complexes of Copper and Iron were synthesized. Initially, the Tyramine dithiocarbamate ligand was synthesized by condensation of Tyramine with carbon disulfide and characterized. This dithiocarbonate was used to prepare the copper and iron metal complexes. These metal complexes were confirmed by 1H-NMR, ESR, powder XRD, Electronic spectra, Infrared, Conductivity, and Magnetic Susceptibility Studies. All the data confirms that these metals forms complexes with octahedral geometry. Antibacterial activity of ligand and metal complexes was tested against Escherichia coli, Bacillus subtilis, and Klebsiella. Ligand and metal complexes were exhibited moderate antibacterial activity. Tyramine dithiocarbamate ligand and their metal complexes are used for docking studies with Dopamine D_1 receptor for interactive studies by Auto Dock 4.0. All the interactions were reported.



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Paper-17 | Heterocyclic Letters 12: iss.-2 (2022), 395-410

Investigations on design and synthesis of novel biologically active isoindolinone derivatives through microwave as well as conventional technique

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

[a] *Department of Chemistry, Bhupal Noble's University, Udaipur, 313001, India*
[b] *Department of Bioengineering and Biosciences, Lovely Professional University, Phagwara, 144001, India*
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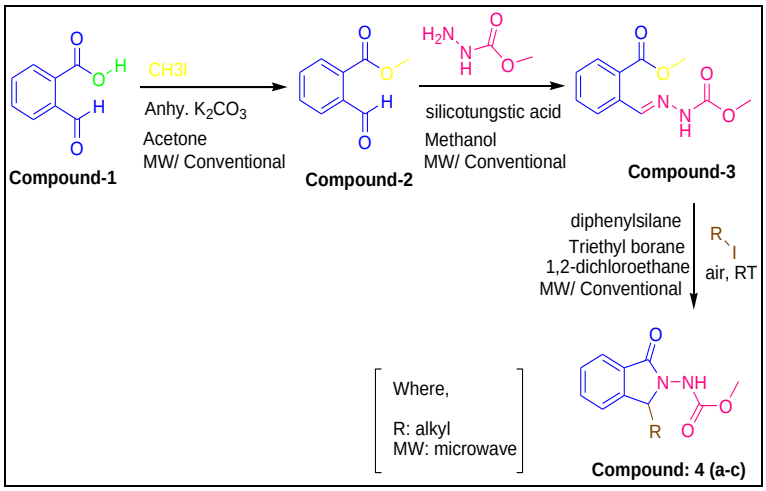
Green multistep synthesis of some new biologically potent Isoindolinone compounds by classical thermal and microwave-irradiation techniques and characterization by the IR, HPLC, H^1-NMR, C^{13} NMR, Mass studies. TSu studies of Isoindolinones are also carried out to predict thermal stability and decomposition phase. Desired Isoindolinones (4a, 4b, 4c) are synthesized through free radical mechanism from azomethine (3) followed through synthesis from ester derivative (2) of 2-carboxy benzaldehyde (1). Biological studies of Isoindolinones have been carried out *in vitro* for antibacterial activity and antifungal activity.



PERSPECTIVE

Perspective No.1 | Heterocyclic Letters 12: iss.-2 (2022), 411-413

Novel Mechanism of Indium Metal-Induced Glycosylation with β-Lactams

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This perspective describes indium metal-induced glycosylation of bromosugar with 3-hydroxy beta lactam along with its unique mechanism.

Heterocyclic Letters
Vol. 12| No.2 |226-238| February-April |2022
ISSN : (print) 2231–3087 / (online) 2230-9632
CODEN: HLEEAI
http://heteroletters.org

REVIEWS

Review No.1	Heterocyclic Letters 12: iss.-2 (2022), 415-443

Review on Coupling of Aryldiazonium Salt of Aminobenzothiazoles with Aromatic or Heteroaromatic mofits

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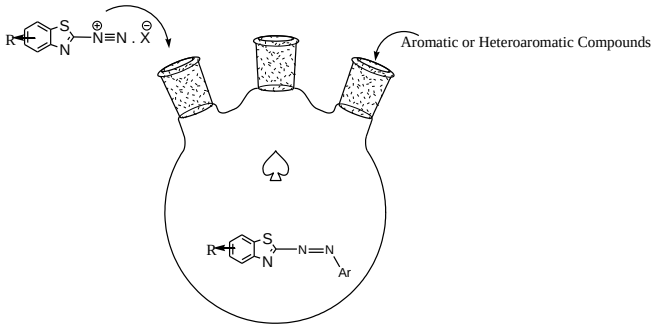
Aminobenzothiazole-azo compounds are industrially very important for technical purposes. Azo group compounds are commonly used in preparation of or as synthetic colour molecules. They are prepared beginning with primary aromatic amines by diazotization and coupling on aromatic mofits.



Review No.2	Heterocyclic Letters 12: iss.-2 (2022), 445-464

A short review on organic heterocyclic compounds as chemosensors for metal cations (2017-2020)

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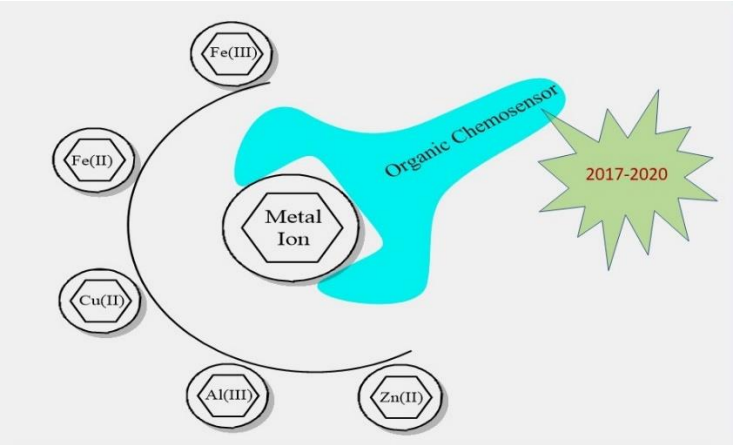

Heterocyclic Letters
Vol. 12| No.2 |226-238| February-April |2022
ISSN : (print) 2231–3087 / (online) 2230-9632
CODEN: HLEEAI
http://heteroletters.org

Review No.3	Heterocyclic Letters 12: iss.-2 (2022), 465-481

Synthesis, reactions and biological activity of isothiocyanates derivatives

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Isothiocyanates reacted with primary and secondary amines to yield the corresponding thiourea, that can undergo heterocyclization to give pyrimidine or thiazine depending upon the condition and the nature of isothiocyanate. The reaction of cyclohexylideneacetyl isothiocyanate with aryl amines afforded aryl-4-oxo-1, 3-diazaspiro-5`, 5`undecan. This conversion involved nucleophilic addition to heterallene and subsequent intermolecular Michael reaction. Diphenylamine reacted with to give 5-cyano-2-diphenyl amino-4-oxo-1-thia-3-azaspiro [5, 5]undecene **.**