Heterocyclic Letters
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Graphical Abstract

Paper-1	Heterocyclic Letters 14: iss.-3 (2024), 521-526

Microwave-Assisted Synthesis of Oxazines *via* Indium-Mediated Reductive Rearrangement of Nitrophenyl-*β*-Lactams

Devalina Ray,*[1] Sakshi Oli,[1] Ritika Rawat[1] and Bimal Krishna Banik*[2]

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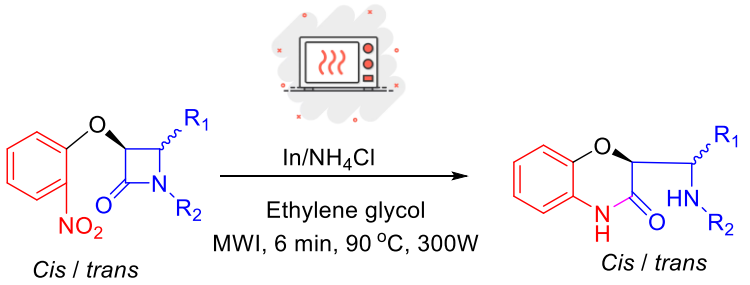
An In/NH_4Cl-mediated reduction of nitroaryl functionalized *β*-lactams to amines followed by intramolecular cyclization and rearrangement through ring rupture has been accomplished for facile synthesis of oxazines in ethylene glycol using microwave irradiation.



Paper-2	Heterocyclic Letters 14: iss.-3 (2024), 527-535

Synthesis, Characterization and Optical Properties Of Thio-1,3,4-Oxadiazol-2-yl Derivatives

R. Rajesh[a,*], R. Subaash[a], P. Santhakumar[a]

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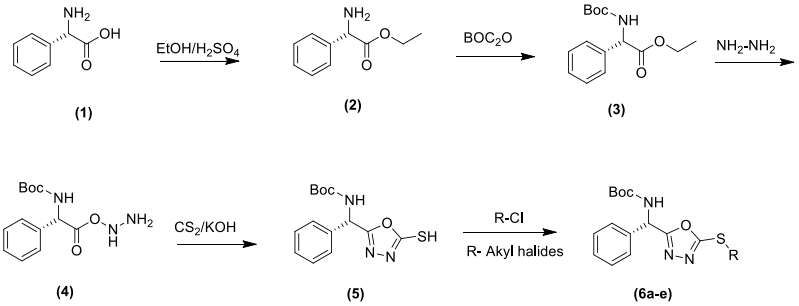
**Corresponding author Email ID: rosetoraj@gmail.com*

The 1,3,4-oxadiazoles exhibiting photochemical, photophysical, electrochemical properties, also have thermal and electroluminescent properties. In the electronic field the 1,3,4-oxadiazoles are used to produce organic light-emitting diodes (OLED), optical brighteners, and laser diodesIn this paper, we reported the synthesis of thio-1,3,4-Oxadiazol-2-yl Derivatives.



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Paper-3 | Heterocyclic Letters 14: iss.-3 (2024), 537-544

Novel metal (ii) oxinates: synthesis and antimicrobial studies

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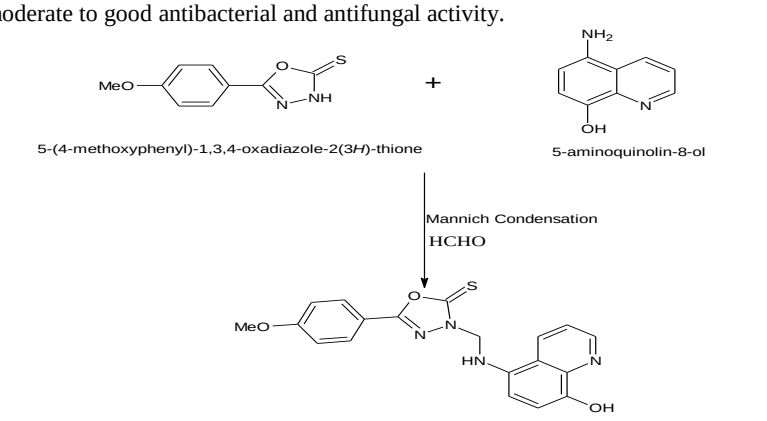
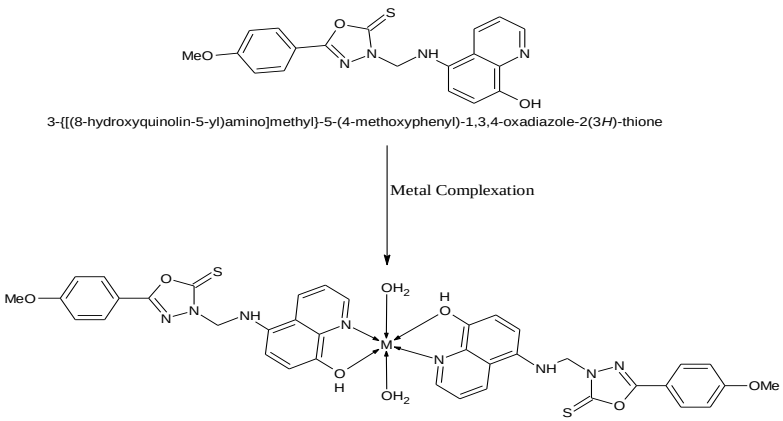
[2]*Head, Dept. of Chemistry, R.R.Mehta College of Science &*
C.L.Parikh College of Commerce, Palanpur-385001(Gujarat), India.
[*]*E-mail: maheshftank@gmail.com*

Synthesis and characterization of a novel clubbed molecule 3-(((8-hydroxyquinolin-5-yl)amino)methyl)-5-(4-methoxyphenyl)-1,3,4-oxadiazole-2(3H)-thione (HAMMOT) and its transition metal (II) complexes. Novel clubbed molecule and its metal (II) complexes displayed moderate to good antibacterial and antifungal activity.



Scheme 1



M = Mn, Co, Ni, Cu, Zn

Scheme 2

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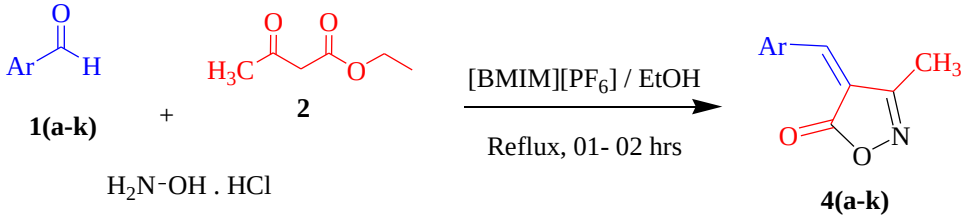
Paper-4	Heterocyclic Letters 14: iss.-3 (2024), 545-551

One pot synthesis of isoxazolone derivatives using ionic liquid as an efficient catalyst via multicomponent reaction.

Ramesh A. Mokal and Suresh C. Jadhavar

Department of Chemistry, Yogeshwari Mahavidyalaya, Ambajogai, Beed (MH),
Affiliated to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra, India,
Corresponding Author E-mail: rameshmokal1981@gmail.com

A simple and convenient route for the synthesis of isoxazol-5(4*H*)-one derivatives is described via multi-component condensation of aryl aldehyde, ethyl acetoacetate and hydroxyl amine under the influence of 1-butyl-3-methyl-imidazolium hexafluoro phosphate [BMIM][PF_6] ionic liquid as an efficient, cheaper and eco-friendly catalyst under conventional reflux condition in ethanol. The present protocol has several beneficial things such as simple work-up process, a cleaner reaction, optimum reaction time and good to excellent yields.



Paper-5	Heterocyclic Letters 14: iss.-3 (2024), 553-560

Synthesis and structural studies of some bis-bidentate schiff bases

A.D. Bansod

Department of Chemistry, RajarsheeShahu Science College Chandur Rly Amravati, India
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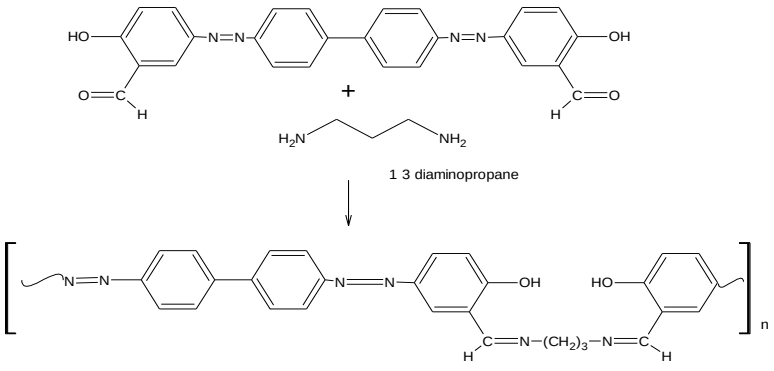
The salen–type Schiff base ligand condensation of 4,4'-bis[(salicylaldehyde-5)azo]biphenyl with1,3-diaminopropane,1,4-diaminobutane,1,2-diaminopropane and 1,2-diaminoethane were investigated and characterized by physical and spectral , techniques namely, elemental analysis, melting point, 1H NMR, IR UV–Vis spectra and mass spectrocopy measurment. The Schiff base were screened for antibacterial activity in vitro against Gram positive and Gram negative bacteria viz. Escherichia coli, specphylococcus aureeus, pseudomonous aeruginosa and Klebsiella pneumoniate using standard agar sup plate or well diffusion method. The ligands BNPSAP, BNBSAP, BIPSAP and BNESAP were found to be active against all bacterial strain.



4,4'bis[(N-Propansalicylaldehydediamine-5)azo]biphenyl (BNPSAP)

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Paper-6 | Heterocyclic Letters 14: iss.-3 (2024), 561-568

Synthesis of a new heterocyclic molecule with an oxadiazole moiety and its biological assesment

M.N Gulhane[a*]

[a]Department Of Chemistry, Arts nd Science College, Pulgaon, District-Wardha-442302
(M.S) India
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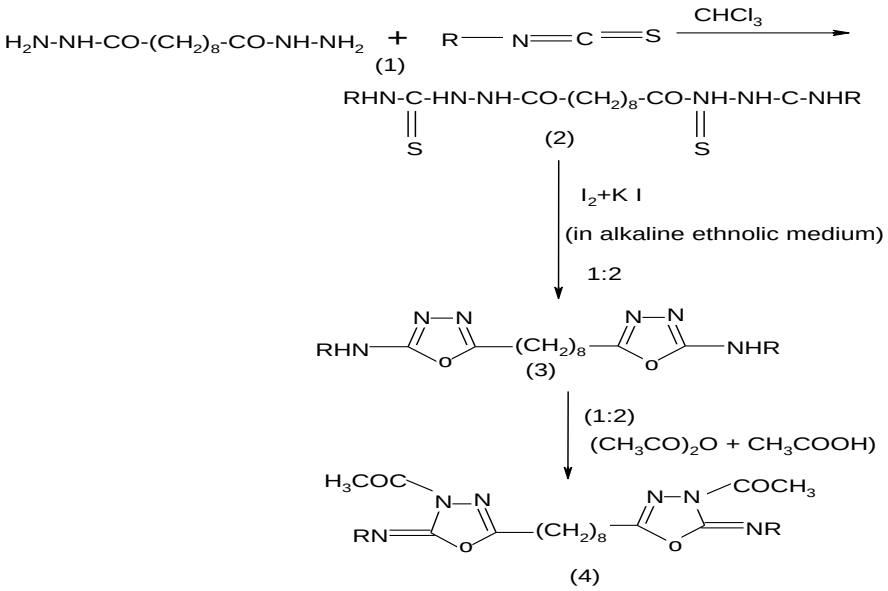
In the present study a series of 1,3,4 oxadiazoles have been synthesized by multistep reaction scheme. Sebacic acid dihydrazide was used as the starting material. The structure of the newly synthesized derivatives were established by the combined practice of elemental analysis,IR,1HNMR,and Mass spectrometry. We report the synthesis of biological assessment of 1,3,4 oxadiazole substituted derivatives as novel potential antibacterial agent.



Where,
R=o-tolyl, m-tolyl, p-totyl, phenyl, p-chlorophenyl, m-chlorophenyl and t-butyl

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Paper-7	Heterocyclic Letters 14: iss.-3 (2024), 569-582

Synthesis, Characterization and Biological studies of N'-((5-chloro-3-methyl-1-phenyl-1H-pyrazol-4 yl)methylene Schiff's base ligands and their transition metal complexes

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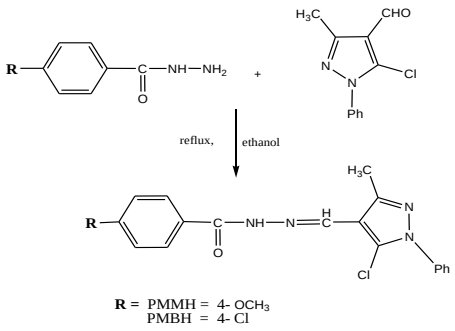
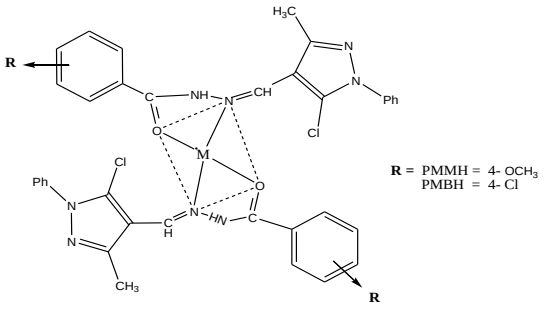
[a,c]Department of Chemistry, TVE'S Dhanaji Nana Mahavidyalaya, Nehru Vidya Nagar Faizpur, Taluka-Yawal, Dist-Jalgaon MS, India.
[b]Department of Chemistry, Arts and science college, Bhalod, Dist-Jalgaon MS, India.
Corresponding author Email id: pallavi51083@gmail.com

5- chloro pyrazole-4-carbaldehyde Schiff's base ligand was synthesized by condensation of 5-chloro-3-methyl-1-phenyl-pyrazole-4-carbaldehyde with different substituted amines. Its coordination behavior with divalent Co (II), Ni (II), and Cu (II) ions was studied and the synthesized compounds were screened for their evaluation of the biological activity.



Scheme1. Synthesis of ligands (PMMH and PMBH)



Scheme 2. Proposed structure for Co(II), Ni(II) and Cu(II) complexes.

Paper-8	Heterocyclic Letters 14: iss.-3 (2024), 583-589

Development of novel bioanalytical method for quantification of fostemsavir by lc/ms in human plasma

Dommeti Bharathi,[a] S. V. S. Sumaltha,[a] Ramana Tamminana,[b] Sapavat Madhavi,[c] and Rudraraju Ramesh Raju[a*]

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[b] *Department of Chemistry, VIT-AP University, Inavolu, Beside AP Secretariat, Amaravati AP-522237, India. E-mail: rtamminana17@gmail.com*
[c] *Department of Chemistry, VSR Government Degree College, Movva, Krishna District, 521135.*
[1]***Email:*** *rudrarajurameshraju786@gmail.com.*

To develop the method and quantification of human plasma, we generally require LC (liquid chromatography) and mass spectrometry. In this paper, we have accomplished a novel LC-MS approach for quantification of FSVR levels in human plasma. The solvent system like (CH_3CN : MeOH (80:20)) was used for this experiment. Mobile phase (the mixture of methanol, acetonitrile and 1mM aqueous ammonium phosphate (25:50:25)) having flow rate 0.7 mL/min at pH 6.1 incorporated along with sample in the column (Xbridge C18, 50 x 4.6 mm). To monitor the multiple reactions we have used positive electrospray ionization mode. The proposed method was highly sensitive with good linearity range. The developed method was found stable for 48 hours in bench top stability, 90 days for long terms stability and 48 hours for freeze thaw stability. The developed method is simple and efficient and can be recommended for use in pharmacokinetics studies as well as in the monitoring of the investigated FSVR in body fluids

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Paper-9	Heterocyclic Letters 14: iss.-3 (2024), 590-594

Novel Synthesis of fused Spiro β-Lactams from N-Methyl-Isatin

Jerome Escano[a], Ratna Mukherjee[b], Aarif Latif Shaikh[a, c] and Bimal Krishna Banik[a, d*]

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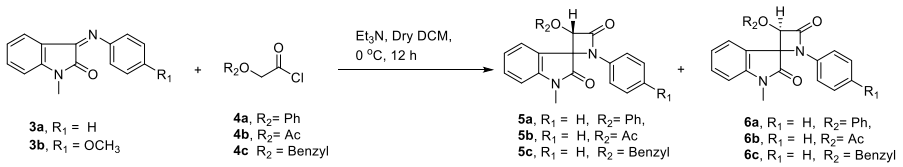
[b]*Department of Chemistry, Dum Dum Motijheel College, Kolkata 700074, West Bengal, India*
[c]*Aragen Life Sciences Pvt. Ltd. (Formerly known as GVK Biosciences Pvt. Ltd.), Mallapur, Hyderabad 500076, Telangana, India*
[d]*College of Sciences and Human Studies, Deanship of Research, Prince Mohammad Bin Fahd University, Al Khobar 31952, Kingdom of Saudi Arabia*
Corresponding author Email: bimalbanik10@gmail.com

Spiro β-lactams have been synthesised by Staudinger (2+2) cycloaddition reaction of *N*-methyl isatin derived Schiff bases with various acid chlorides in the presence of triethylamine and anhydrous dichloromethane in the present study.



Paper-10	Heterocyclic Letters 14: iss.-3 (2024), 595-602

Synthesis And Antimicrobial Activities Of Some Novel 3-(2-Aminothiazol)-5-(Substituted Benzylidene)Thiazolidine-2, 4-Dione Derivatives.

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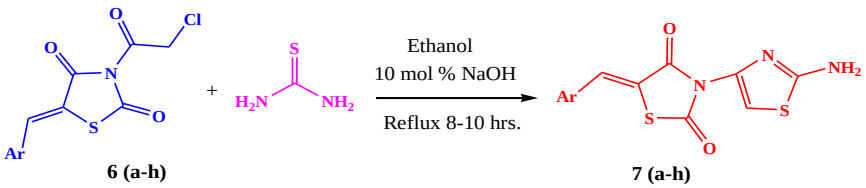
[a]*Department of Chemistry, Milind College of Science, Nagsenvana, Chhatrapati Sambhajinagar-431001, Maharashtra, India*
[b]*Department of Chemistry, Shri Sadguru Gangageer Maharaj Science, Gautam Arts & Sanjivani Commerce College, Kopargaon, Dist- Ahmednagar-423601, Maharashtra, India*
Email: mahendragaikwad7777@gmail.com

In present work, 3-(2-aminothiazol-4-yl)-5-(4-substituted benzylidene) thiazolidine-2,4-dione **(7a-h)** were synthesised by reacting substituted 5-benzylidene-3-(2-chloro acetyl)thiazolidine-2,4-dione **(6a-h)** with thiourea in the presence of sodium hydroxide in ethanol solvent by Hantzsch reactions. All the synthesized compounds **(7a-h)** screened for their antibacterial activity against two Gram-positive bacteria viz., *B. licheniforims* and *B. subtilis* and one Gram-negative bacteria viz. *E. coli* and antifungal activity against *C. albicans* funal strains. All the synthesised compounds shows excellent to moderate activity against all pathogens.



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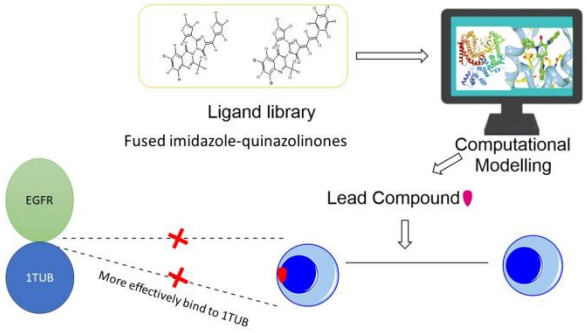
Paper-11	Heterocyclic Letters 14: iss.-3 (2024), 603-613

Docking studies of quinazolinones fused imidazolones as anticancer agents

J Monga[a], N S Ghosh[b*], D Kumar [c], A Husain [d]

[a]*Choudhary devi lal college of Pharmacy, Bhagwangarh, Jagadhari, Haryana, India,135003*
b [*]Faculty of pharmaceutical science, Assam down town University Guwahati, India-781026
c Department of Pharmaceutical Chemistry, School of Pharmaceutical Sciences, Shoolini University, Solan, Himachal Pradesh-173229, India
[c]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Jamia Hamdard (Hamdard University), New Delhi, India110064
**E-mail : ghoshniladry@gmail.com*

In the present work, *in silico* studies was performed on synthesized compounds taken from literature to support experimental findings or to accomplish preliminary confirmation of the observed in-vitro cytotoxicity using PDB ID- (1TUB) & PDB ID-1MI7 (EGFR-TS) by Molegro virtual docker 4.0.2. All the compounds showed effective binding with 1TUB in comparison to 1M17. Although these compounds have much resemblance in structure to Raltitrexed and Thymitaq which inhibit its EGFR tyrosine kinase by binding to the adenosine triphosphate (ATP)-binding site of the enzyme. But these are found to bind effectively with tubulin heterodimer (1TUB).

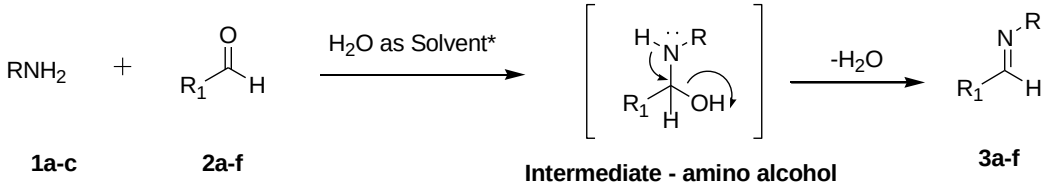


Paper-12	Heterocyclic Letters 14: iss.-3 (2024), 615-617

Dehydration in Water: Imine Preparation

Aarif Latif Shaikh[1], Ramesh Naresh Yadav[2], Bimal Krishna Banik[3]*

[1]Aragen Life Sciences Pvt. Ltd. (Formerly known as GVK Biosciences Pvt. Ltd.), Mallapur, Hyderabad 500076, Telangana, India. [2]Veer Bahadur Singh Purvanchal University Jaunpur-222003 (U.P) INDIA, [3]Department of Mathematics and Natural Sciences, College of Sciences and Human Studies, Deanship of Research, Prince Mohammad Bin Fahd University, Al Khobar 31952, Kingdom of Saudi Arabia; Email: bimalbanik10@gmail.com; bbanik@pmu.edu.sa



1a-c **2a-f** **Intermediate - amino alcohol** **3a-f**

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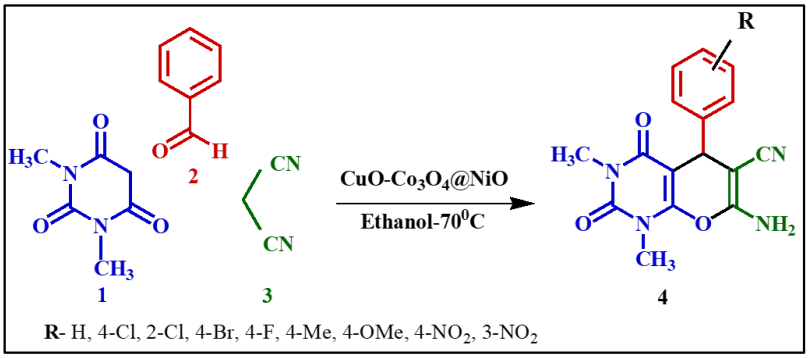
Paper-13	Heterocyclic Letters 14: iss.-3 (2024), 619-627

An efficient and reusable heterogeneous nanocatalyst: CuO-Co3O4@NiO core shell for the rapid one-pot synthesis of pyrano [2,3-d] pyrimidines

S. V. Thakare*[a], K. D. Khairnar[b], A. M. Sajgure[c]

1. M.V.P. Samaj's K.S.K.W. Arts, Science and Commerce College, CIDCO, Nasik
Corresponding author E-mail ID –thakare.savita1@gmail.com

Core shell CuO-Co3O4@NiO nanoplates is novel, recoverable and cost-effective nanoscale heterogeneous solid catalysts for one-pot multi-component solvent free synthesis of pyrano [2,3-d] pyrimidines.



Paper-14	Heterocyclic Letters 14: iss.-3 (2024), 629-633

Synthesis of some novel piperidine derivatives from substituted benzosuberones

Srinivas Bathini[1] and Rudhvik Bathini[2]

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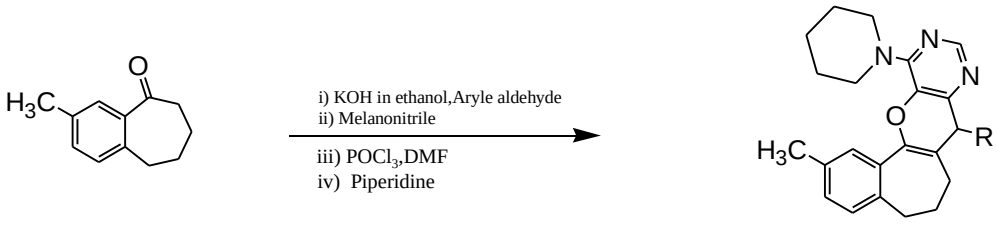
2. Srizanta Bio Lab, Research and development, Dammiguda, Hyderabad, Telangana, 500048, India. srizantabiolab@gmail.com

8-(4-Methoxy-phenyl)-2-methyl-12-piperidin-1-yl-5,6,7,8-tetrahydro-13-oxa-9,11-diaza-benzo[3,4]cyclohepta[1,2-b]naphthalenederivatives (**4a-e & 5a-e**) are obtained by the condensation of 2-Amino-4-(4-methoxy-phenyl)-10-methyl-4,5,6,7-tetrahydro-1-oxa-dibenzo[a,c]cycloheptene-3-carbonitrile derivatives**3** with phosphorus oxy chloride in dimethyl formamide and piperidin. The structures of **5a-e** were confirmed by the spectral analysis.



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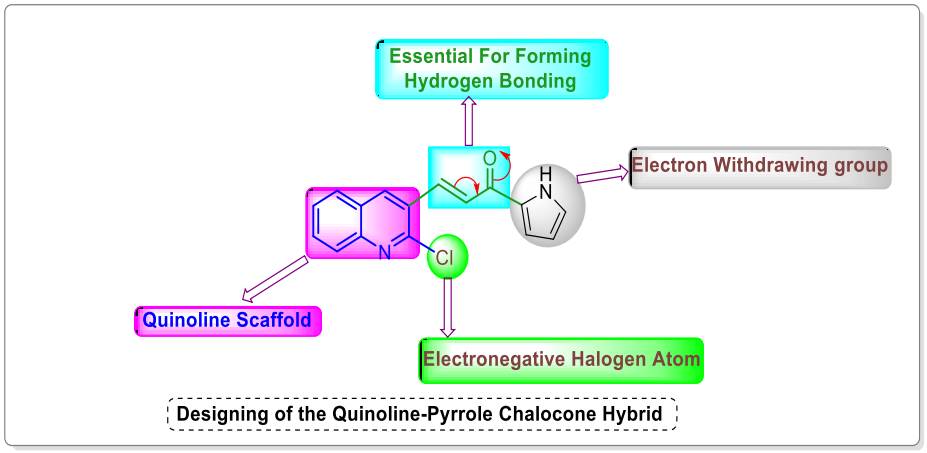
Paper-15 | Heterocyclic Letters 14: iss.-3 (2024), 635-643

Designing, Synthesis, and Anticancer Evaluation of Some New Quinoline Based Chalcones

Sarita C. Deokar[a], Shrikant S. Pendalwar[a], Yogesh S. Nalwar[b] and Sudhakar R. Bhusare[a]*

[a]*Department of Chemistry, Dnyanopasak College, Parbhani-431 401, MS, India.*
[b]*Department of Chemistry, Toshniwal ACS College, Sengaon, Hingoli, MS, India*



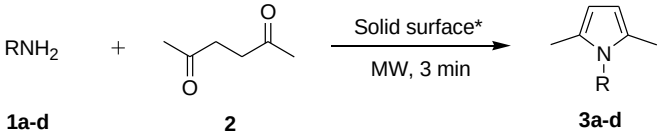
Paper-16 | Heterocyclic Letters 14: iss.-3 (2024), 645-649

The Role of Penetration Depth of Clay in Microwave-Induced Reactions: Synthesis of Pyrroles

Aarif Latif Shaikh[a], Aparna Das[b], and Bimal Krishna Banik[*c]

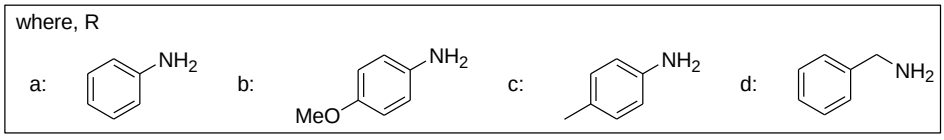
[a]*Aragen Life Sciences Pvt. Ltd. (Formerly known as GVK Biosciences Pvt. Ltd.), Mallapur, Hyderabad 500076, Telangana, India;* [b]*Kertz Ltd, 254-262 Shirley Road, Southampton, SO15 3HP, United Kingdom;* [c] *Department of Mathematics and Natural Sciences, Deanship of Research Development, Prince Mohammad Bin Fahd University, Al Khobar 31952, Kingdom of Saudi Arabia*
Email: bimalbanik10@gmail.com; bbanik@pmu.edu.sa

Clay-mediated microwave-mediated reactions for the preparation of pyrroles are conducted. The reaction between hexanedione with aromatic amines using different solid clays is studied. The penetration depth of the solids has influence on this reaction. Other acidic reagents are not necessary for the success of this reaction.



1a-d **2** **3a-d**

Solid surface* = Montmorillonite; Silicon dioxide/quartz; Aluminium oxide; Molecular sieves/Zeolites



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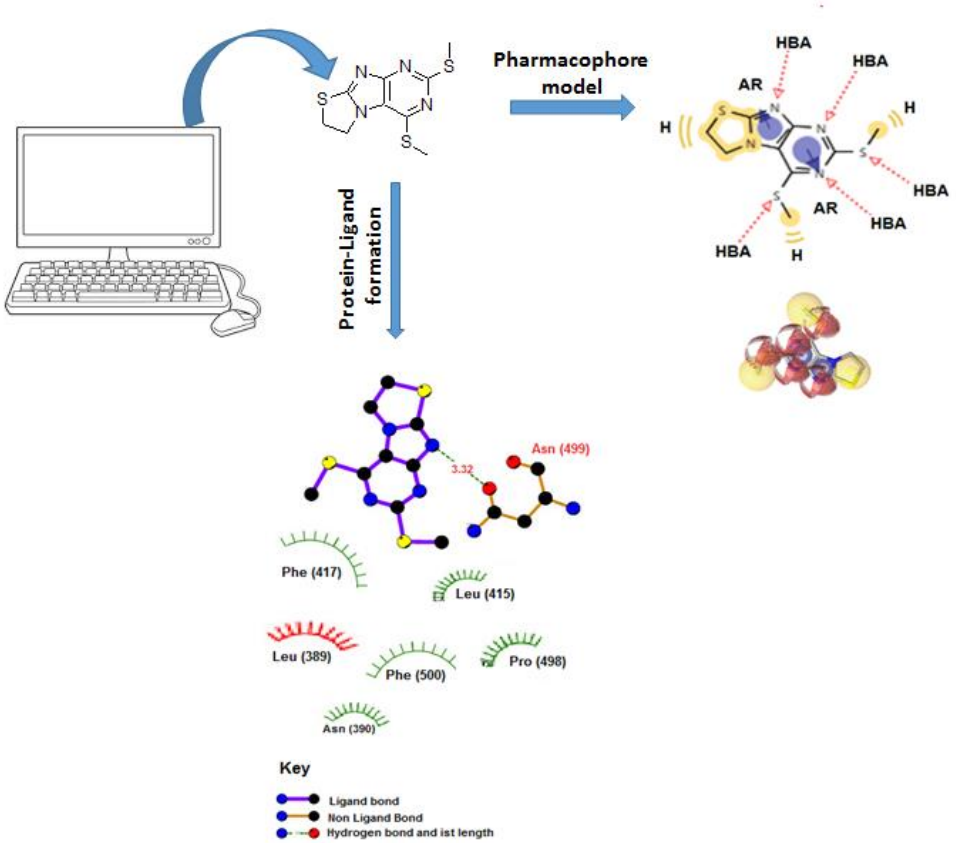
Paper-17 | Heterocyclic Letters 14: iss.-3 (2024), 651-666

Theoretical interaction of purine and its derivatives with Human ecto-5´-nucleotidase, associated to some Physicochemical properties

Rosas-Nexticapa Marcela, Figueroa-Valverde Lauro, Alvarez-Ramirez Magdalena, Mateu-Armand Virginia, Cervantes-Ortega Catalina, Melgarejo-Gutierrez Montserrat, Garcimarrero-Espino Alejandra, Aguilar Sanchez Emilio .

[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.*



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Paper-18 | Heterocyclic Letters 14: iss.-3 (2024), 667-674

Corrosive behaviour of iron alloy with variable oxygen concentration in presence of organic acidic medium

G. D. Thorat[a], R. T. Parihar[b]

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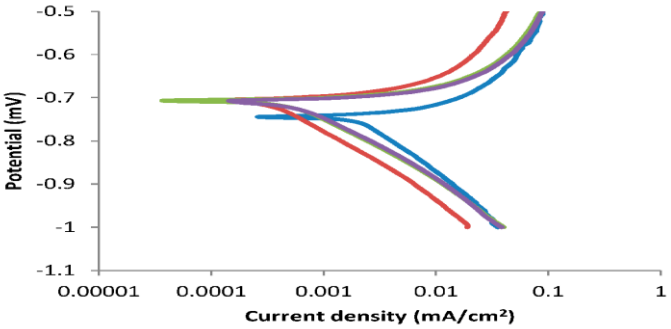
Studied iron metal alloy by non electrochemical techniques (weight loss method) and electrochemical techniques inorganic acidic medium. Corrosion current decreases it means that corrosion of iron are decreases in organic acidic medium in presence of corrosive inhibitor.



Paper-19 | Heterocyclic Letters 14: iss.-3 (2024), 675-681

Incredibly productive one-pot synthesis of quinazolin-4(3*h*)-ones using tris(pentafluorophenyl)borane as an effective catalyst

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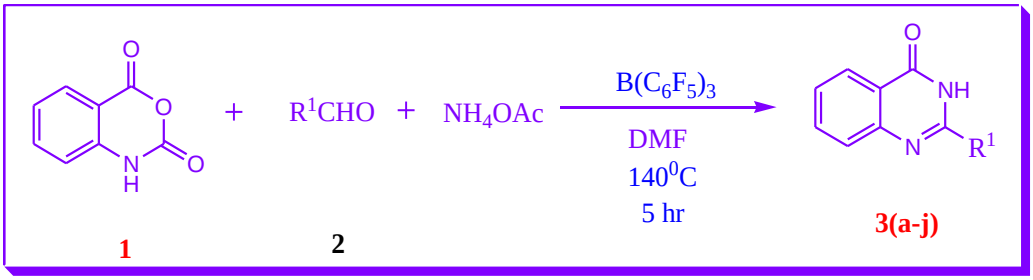
Using isatoic anhydride, ammonium acetate, and aldehydes in DMF at mild conditions, a series of quinazolin-4(3H)-ones have been synthesized in good to exceptional yields with high selectivity in a one-pot procedure. $B(C_6F_5)_3$ effectively stimulated the reaction. Some particular benefits of the current approach are its mildness, short reaction times, and enhanced selectivity.

Graphical Abstract



Synthesis of 2-Substituted Quinazolinone derivatives

Heterocyclic Letters
Vol. 14| No.3|508-520|May-July|2024
ISSN : (print) 2231–3087 / (online) 2230-9632
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REVIEWS

Review No.1	Heterocyclic Letters 14: iss.-3 (2024), 683-694

Review of microwave-assisted synthesis of azirine and azetidine derivatives

Figueroa-Valverde Lauro, Rosas-Nexticapa Marcela, Alvarez-Ramirez Magdalena, mateu-Armand Virginia, Aguilar-Sanchez Emilio, Bonilla-Zavaleta Enrique.

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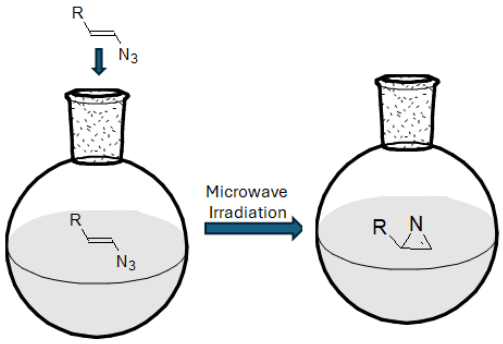

Review No.2	Heterocyclic Letters 14: iss.-3 (2024), 695-702

Synthesis of biologically active heterocyclic compounds by using eggshell powder catalyst

Mohini A. Tayadea, Ganesh R. Chaudharia* , Rakesh P. Chaudhari, Yogesh A.Tayade[b],

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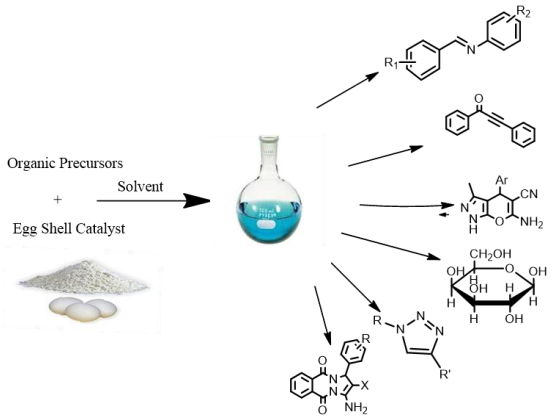

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Review No.3	Heterocyclic Letters 14: iss.-3 (2024), 703-715

Isoflavones are a key research scaffold in medicinal chemistry: A Review

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Isoflavones showed diverse biological activities particularly associated with anticancer activity due to binding with oestrogen receptors which is related to the inhibition of cell cycle. There are many biological activities attributed to isoflavonoids. The majority of them could be beneficial and some of them may be detrimental, depending on specific circumstances. Isoflavonoids play an important role in human nutrition as health promoting natural chemicals. They belong to plant secondary metabolites that mediate diverse biological functions through numerous pathways. The results of epidemiologic studies exploring the role of isoflavonoids in human health have been inconclusive.