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Graphical Abstract

Paper-1	Heterocyclic Letters 12: iss.-1 (2022), 13-18

Preparation of a resveratrol-ascorbic acid mem conjugate

Rasidul Amin* and David A. Hunt**

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***Department of Chemistry, The College of New Jersey, 2000 Pennington Road*
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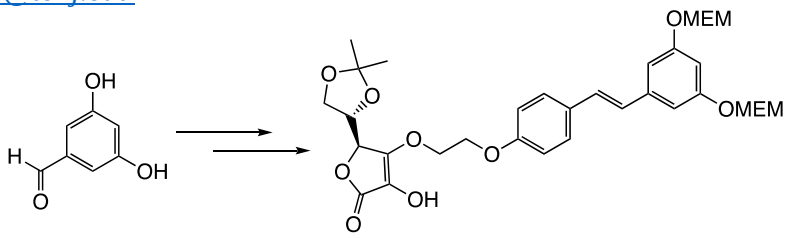

Paper-2	Heterocyclic Letters 12: iss.-1 (2022), 19-23

Banik's Cycloaddtion Reaction Towards Beta Lactams: Mechanistic Insights

Bimal Krishna Banik

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Banik's cycloaddition describes the stereospecific synthesis of β-lactams starting from polyaromatic imines and acid chlorides in the presence of a tertiary base. The N-polyaromatic substituent has a crucial role that controls the synthesis of thermodynamically stable *trans-N*-azetidin-2-one. A probable mechanism of this process is advanced based upon the available literature

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Paper-3 | Heterocyclic Letters 12: iss.-1 (2022), 25-40

In vitro antioxidant activity of different polarity extracts and metabolites isolated from *moltkia ciliata* growing in algeria

Soumaia CHIHI [a,b], Oumelkheir RAHIM [a], Rabab ZATOUT [c] and Ali DOUADI [a]
[a] Pollution & Waste Treatment Laboratory, Department of Chemistry, Faculty of Mathematics and Matter sciences, Kasdi Merbah University, Ouargla 30000, Algeria.
[b] VTRS Laboratory, El-Oued University, B.P. 789, El-Oued 39000, Algeria [c] Department of pharmacy, Faculty of medicine, Benyoucef Benkhedda Algeirs 1University, Algeria.* *E-mail Corresponding author:* ***rahioumelkheir@gmail.com***

The plant *Moltkia ciliata* belong to a family ***Boraginaceae,*** although this plant has been traditionally used for the treatment of various ailments still no systematic pharmacognostical, phytochemical and pharmacological work has ever been carried out on this potential plant.

Fig.1: Geographical distribution of the plant in Africa in 2007 and image showing the outside of the plant *Moltkia ciliata*

Evaluation of antioxidant properties using electrochemical and spectrophotometrical assays and determination *of total bioactive compounds* content of the ethyl acetate (EtOAc) and *n*-butanol (*n*-BuOH) extracts of *Moltkia ciliata*. Chromatographic and HPLC analysis of extract shows many compounds with different quantities. The study concludes this plant is a rich source of phenols and flavonoids, and also showed good in-vitro antioxidant activity by all methods.

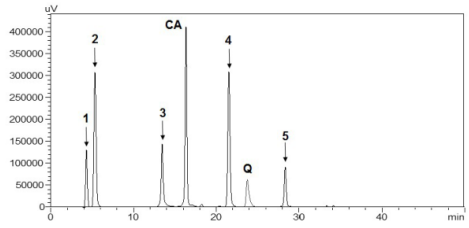

Fig. 2: Chromatograms HPLC

The results showed that EtOAc extract which had the highest level of *bioactive compounds* content, exhibited the most potent antioxidant capacity in each assays compared to the *n*-BuOH extract.

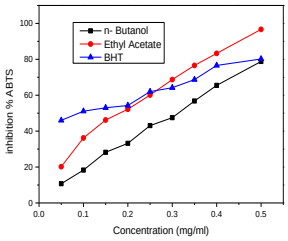

Fig. 4: ABTS radical scavenging activities of extracts of *M.Ciliata*

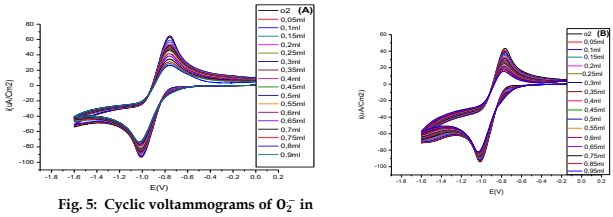

Fig. 5: Cyclic voltammograms of $O_2^{\bullet-}$ in presence of (A) AcOEt extract ,(B) n-BuOH extract at different concentrations in DMF +0.1M TNBHFP on GC as working electrode vs. Hg/Hg_2Cl as reference at 28°C with scan rate of 100 mV/s

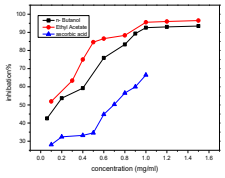

Fig. 6: The DPPH radical scavenging activity of *M. Ciliata* extracts and the ascorbic acid.

Thus, the plant *M. ciliata* can be explored as a potential source of natural antioxidant.

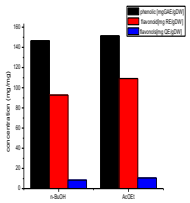

Fig. 3: Total phenolic content, flavonoid and flavonols of extracts from *M. ciliata*

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Paper-4 | Heterocyclic Letters 12: iss.-1 (2022), 41-50

Synthesis and molecular docking of some new azo dyes derived from benzidine and study some of their antimicrobial potential

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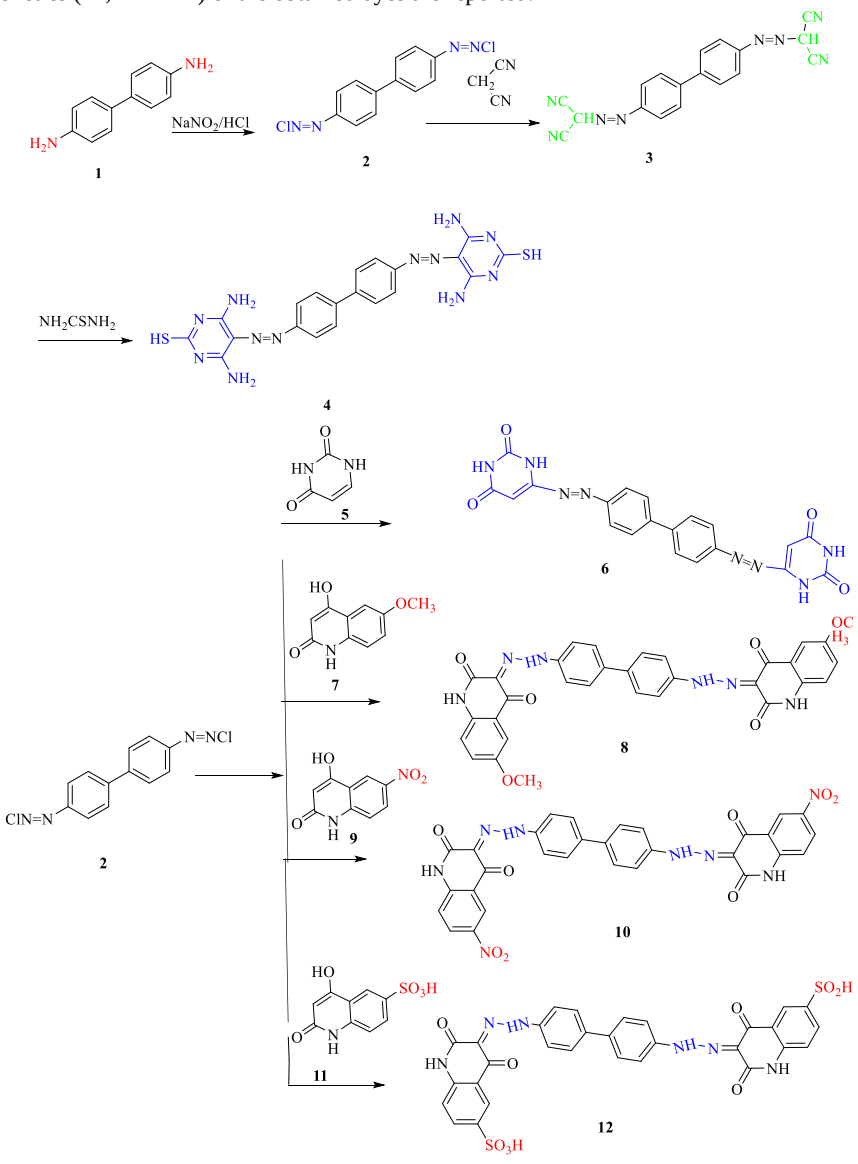
This research includes preparing some new heterocyclic compounds derived from benzidine used as an azo dye such as thiopyrimidine , from the reaction between 2, 2'-((*1E, 1'E*)-[1, 1'-biphenyl]-4, 4'-diylbis (diazene-2, 1-diyl)) dimalononitrile **3** and thiourea in absoulte ethanol to 5, 5'-(*1E, 1'E*)-[1, 1'-biphenyl]-4, 4'-diylbis (diazene-2, 1-diyl)) bis (4, 6-diaminopyrimidine-2(*5H*)-thione **4** and another way four compounds were synthesized from diazonium salt of benzildine **2** with 4-hydroxy-6-methoxyquinolin-2(*1H*)-one (**7**), 4-hydroxy-6-nitroquinolin-2 (*1H*)-one (**9**) and 1, 2-dihydro-4-hydroxy-2-oxoquinoline-6-sulfonic acid **(11)** to give (*3E*)-3, 3'-([1, 1'-biphenyl]-4, 4'-diylbis (hydrazin-2-yl-1-ylidene)) bis (6-methoxyquinoline-2,4 (*1H,3H*)-dione) **8,** (*3E*)-3,3'-([1,1'-biphenyl]-4,4'-diylbis (hydrazin-2-yl-1-ylidene)) bis (6-nitroquinoline-2,4 (*1H,3H*)-dione) **10** and (*3E*)-3,3'-([1,1'-biphenyl]-4,4'-diylbis (hydrazin-2-yl-1-ylidene)) bis (2,4-dioxo-1,2,3,4-tetrahydroquinoline-6-sulfonic acid) **12** respectively. The spectral characteristics (IR, ^{1}HNMR) of the obtained dyes are reported.



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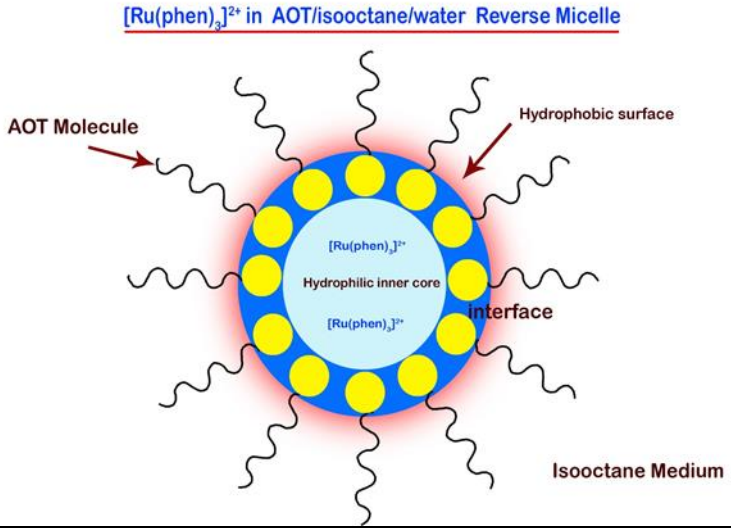
Paper-5 | Heterocyclic Letters 12: iss.-1 (2022), 51-59

Photoemission characteristics of ruthenium(ii) phenanthroline complexes in aot reverse micelle

Helen Ratna Monica Jeyarajan*

Post Graduate & Research Department of Chemistry, The American College, Madurai - 625 002, Tamilnadu, India.

**Email: helenrmonica@americancollege.edu.in*



Paper-6 | Heterocyclic Letters 12: iss.-1 (2022), 61-67

Synthesis and Antimicrobial activity of Substituted 4-[(1*H*-benzo[*D*]imidazol-2yl)methyl]phenol derivatives

Srinivasulu Chittimalla, Jalapathi Pochampally*, Sreedhar Maroju, Ganapathi Velupula, Veera Bhdram, Vishnu Thumma and Umapathi Nalla

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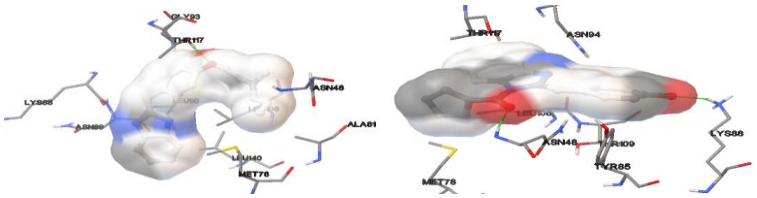
Email: srinivas6meena@gmail.com

A new set of *N*-substituted benzimidazole analogues were prepared by the reaction of respective benzimidazoles with different acids, acid chlorides and alky halides under appropriate conditions. The synthesised derivative were screened for antimicrobial activity and studied their molecular docking



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Paper-7	Heterocyclic Letters 12: iss.-1 (2022), 69-86

DNA binding, Photo cleavage, Antibacterial and Cytotoxicity activities of Mono nuclear metal complexes of an N, O donor Benzothiazole derivative Schiff base ligand

N. Nageswara Rao, K. Gopichand, E. Kishan, R. Nagaraju, Abdul Majeed Ganai and P. Venkateswar Rao*

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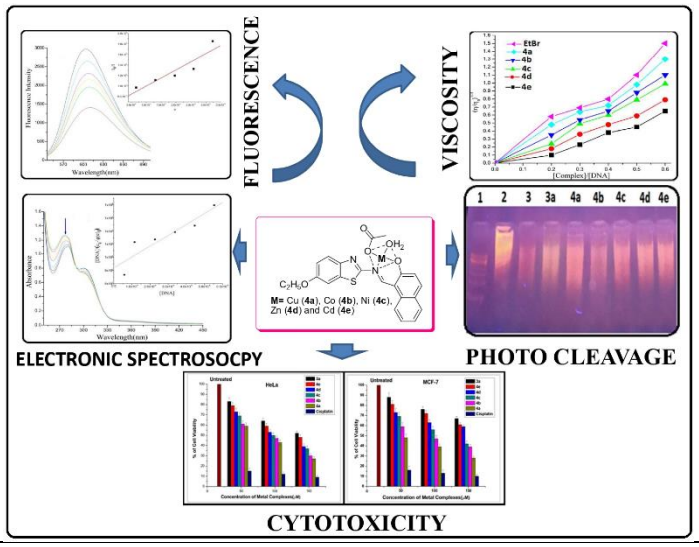
Imine base ligand and its mono nuclear metal complexes have been synthesized and were characterized by various spectroscopic and analytical techniques. The DNA binding, Photo cleavage studies have been studied. The synthesized compounds were screened for two gram negative bacterial species and three gram positive bacterial species. The In-vitro cytotoxicity of the synthesized compounds was also evaluated by MMT assay



Paper-8	Heterocyclic Letters 12: iss.-1 (2022), 87-99

Reduction of aliphatic, aromatic and heteroaromatic carboxylic acid derivatives to alcohol promoted by trityl resin under presence of copper sulphate and sodium borohydride catalytic system

Anirudhdha G. Kalola [a], Pratibha Prasad [a] and Manish P. Patel [a]*

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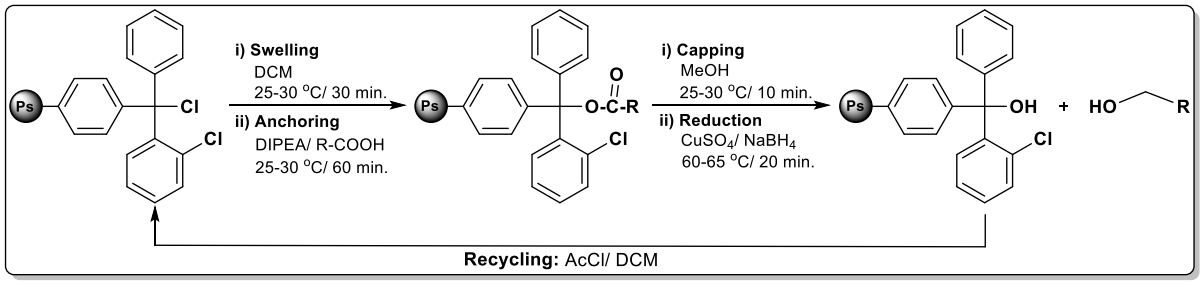
Corresponding Author. Tel.:02692-226856; e-mail: patelmanish1069@yahoo.com



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Paper-9 | Heterocyclic Letters 12: iss.-1 (2022), 101-108

Ultrasonic assisted synthesis and optimization of 2-amino-4h-chromene's derivatives

Sarika Patel, Shweta Patel, Hasit Vaghani* , Jasmin Kumbhani*, Ravibhai Bhola

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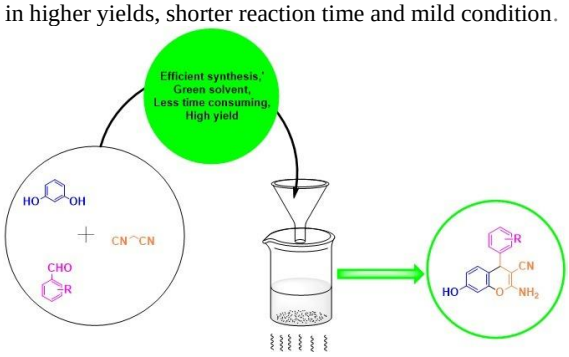
**Correspondence: jhk01@ganpatuniversity.ac.in , hvv01@ganpatuniversity.ac.in*

A one pot three component reaction of 2-amino-4-aryl-4*H*-chromene and its derivatives were synthesized under ultrasonic irradation using morpholine as a catalyst in aqueous condition. The synthesized titled derivatives were confirmed by IR, ^{1}H NMR, ^{13}C NMR, mass spectra and elemental analysis. When compared to traditional method, ultrasonic irradiation is a morden technology for improving prepared in higher yields, shorter reaction time and mild condition.



Paper-10 | Heterocyclic Letters 12: iss.-1 (2022), 109-118

An efficient ionic liquid medium for the synthesis of new naphthol-indole hybrids and their anti cancer evaluation

Kurapati Ravi[a] , Bala Narsimha Dhoddi[a] and Jalapathi Pochampally[a*]

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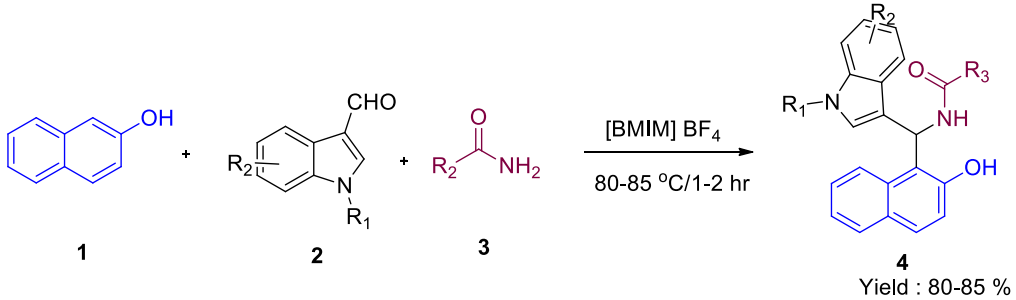
Corresponding author E-mail ID: pochampalli.ou.chemi@gmail.com

A one-pot three-component condensation of 2-naphthol **1** with indol aldehydes **2** and amides **3** in the presence of ionic liquid medium [BMIM] BF4 has been described as an environmentally friendly and efficient process for the synthesis of N-((2-hydroxynaphthalen-1-yl)(1-methyl-1H-indol-3-yl)methyl)acetamide derivatives **4**. This innovative process has various advantages, including high yields, quick reaction times, operational simplicity, and no time-consuming set-up. Further, the synthesized compounds were examined for their anticancer potential towards PC-3 and SKOV-3 cells. Among the screened, compound 4b and 4f are found to be the promising compounds with IC50 values ranges from 7.9 to 9.1µM against PC-3 and SKOV-3 cells. In additional, the docking studies revealed that compound 4b and 4f showed good binding affinities in relation to human RET protein tyrosine kinase.



1 **2** **3** **4**

Yield : 80-85 %

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Paper-11 | Heterocyclic Letters 12: iss.-1 (2022), 119-123

Synthesis of Novel Products by Using Aniline and Ethyl Benzoate

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[a]Research Scholar, [b]Associate Professor
[a]Department of Chemistry,[a]The Institute of Science, Mumbai University,
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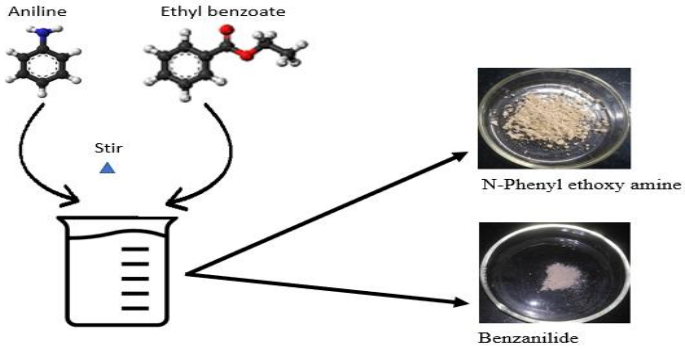
**E-mail: meghagharge777@gmail.com*

Simple method of Synthesis of novel products by using aniline and ethyl benzoate. This preparation was performed by using aniline and ethyl benzoate without any catalyst.

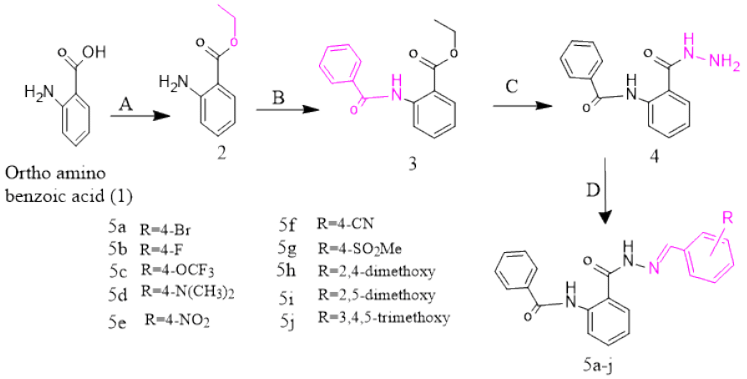


Paper-12 | Heterocyclic Letters 12: iss.-1 (2022), 125-133

Synthesis and biological evaluation of hydrozone derivatives of ortho-aminobenzoic acid

Dachepally Raju[a*], J. Sreeramulu[a], P. Malleswarareddy[b] and Nagaraju[c]

Department of Chemistry, Sri Krishnadevaraya University, Anantapuramu, Andhra Pradesh, India-515003.
***Corresponding author:** J. Sreeramulu, Department of Chemistry, Sri Krishnadevaraya University, Anantapur. Andhra Pradesh, India—515003. pmeshvarreddy@gmail.com*



A. Conc.H_2SO_4, Ethanol,reflux,10hr. B.Benzyl chloride, TEA, DCM, 10°C,reflux 3hr, C.Hydrazine-hydrate,ethanol,reflux,6hr. D. Aldehydes(a-j), Ethanol reflux,1hr.

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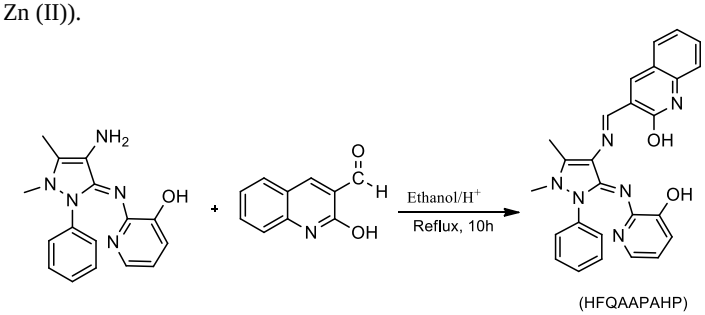
Paper-13	Heterocyclic Letters 12: iss.-1 (2022), 135-141

Synthesis, spectral and biological properties of 4-aminoantipyrine-based schiff base transition metal complexes.

Shyam A. Takle[1*], Sunil R. Mirgane[2]

*1*Department of Chemistry, Sant Dnyaneshwar Mahavidyalaya Soegaon, Aurangabad-431120*
2Department of Chemistry, J.E.S. College, Jalna-431203
E-mail: taklesa1986@gmail.com

4-Aminoantipyrine moiety containing Schiff bases mono nuclear complexes has been synthesized by reaction of transition metals (Co (II), Ni (II), Cu (II) and Zn (II)).



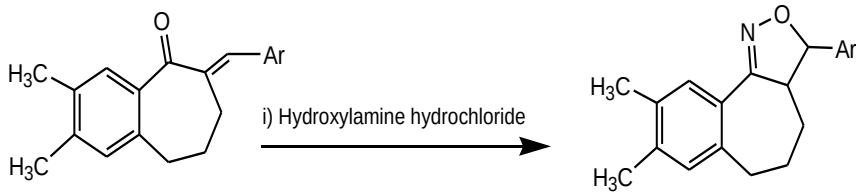
Paper-14	Heterocyclic Letters 12: iss.-1 (2022), 143-148

Synthesis and Biological Studies of Isoxazoles from Benzosuberones

Srinivas Bathini* and Sadhvik. B

Srizanta Bio Lab, Research and development, Dammiguda, Hyderabad, Telangana, 500048, India.
Corresponding author, E-mail:drbathinis@gmail.com

6-Arylidene-3,4-dimethyl-6,7,8,9-tetrahydro-5*H* benzo[a]cyclohepten-5-ones (**6a-g**) were obtained by the condensation of 3,4-dimethyl-6,7,8,9-tetrahydro-5*H*-bezo[a]cyclohepten-5-ones (**5**) with appropriate aromatic aldehydes. Cycloaddition of **6a-g** with hydroxylamine hydrochloride in alkaline medium yielded 8,9-dimethyl-3-phenyl-3a,4,5,6-tetrahydro-3*H*-benzo[6,7] cyclohepta[c]isoxazole derivatives **7a-g**.



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PERSPECTIVE

Perspective No.1	Heterocyclic Letters 12: iss.-1 (2022), 149-154

Clay-Supported Reactions for the Synthesis of Biologically Active Molecules

Bimal Krishna Banik

Department of Mathematics and Natural Sciences, College of Sciences and Human Studies, Deanship of Research, Prince Mohammad Bin Fahd University, Al Khobar 31952, KSA; Email: bimalbanik10@gmail.com; bbanik@pmu.edu.sa

Clay has been used successfully to perform diverse reactions to prepare a variety of organic compounds. In some instances, the acidity of the clay is responsible for the success of these reactions. Some reactions require clay in combination with other acidic catalysts.

REVIEWS

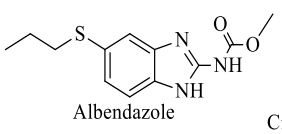
Review No.1	Heterocyclic Letters 12: iss.-1 (2022), 155-168

Mini review on biological activity of imidazole and their derivatives

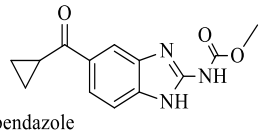
F.M. Zahou[a] , Ruba A. Alolayan[b], Nadia A. A. Elkanzi[b, c]

[a]Biology Department, college of Science, Jouf University, sakaka, 2014, Saudi Arabia
.[b]Chemistry Department, college of Science, Jouf University, sakaka, 2014, Saudi Arabia
[c] Chemistry Department, Faculty of Science, Aswan University, Aswan, 81528, Egypt
Corresponding author (N.A.A.Elkanzi)
**e-mail: nahasan@ju.edu.sa & kanzi20@yahoo.com*

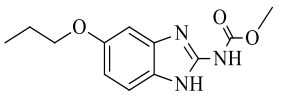
In our review paper we discuss the imidazole derivatives as drug



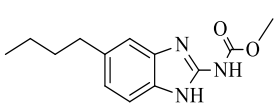
Albendazole



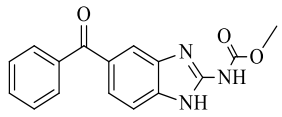
Ciclobendazole



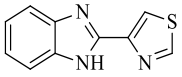
Oxibendazole



Parbendazole



Mebendazole



Thiabendazole

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Review No.2	Heterocyclic Letters 12: iss.-1 (2022), 169-224

Advances and perspectives of fe metal nanoparticles synthesized in ionic liquid and their applications

S. R. Bhirud[a], G. R. Gupta[b], G. R. Chaudhari[a*,a]

P.G.Research Centre, Department of Chemistry, Arts and Science College, Bhalod, Taluka - Yawal, Dist.- Jalgaon.425304.
[b]Department of Chemistry, NTVSs GTP College, Nandurbar-425412 (India)
*Corresponding author Email: *drgrc76@gmail.com*