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Graphical Abstract

Heterocyclic Letters 10: iss.-1 (2020), 11-19

Synthesis of 2-hydroxy-5-(2',3',5',6'-tetrafluoro-pyridylazo)benzaldehyde and 2-hydroxy-5-(2',3',5',6'-tetrafluoro-pyridylazo)phenyl n-sulphanilamide-1-imine

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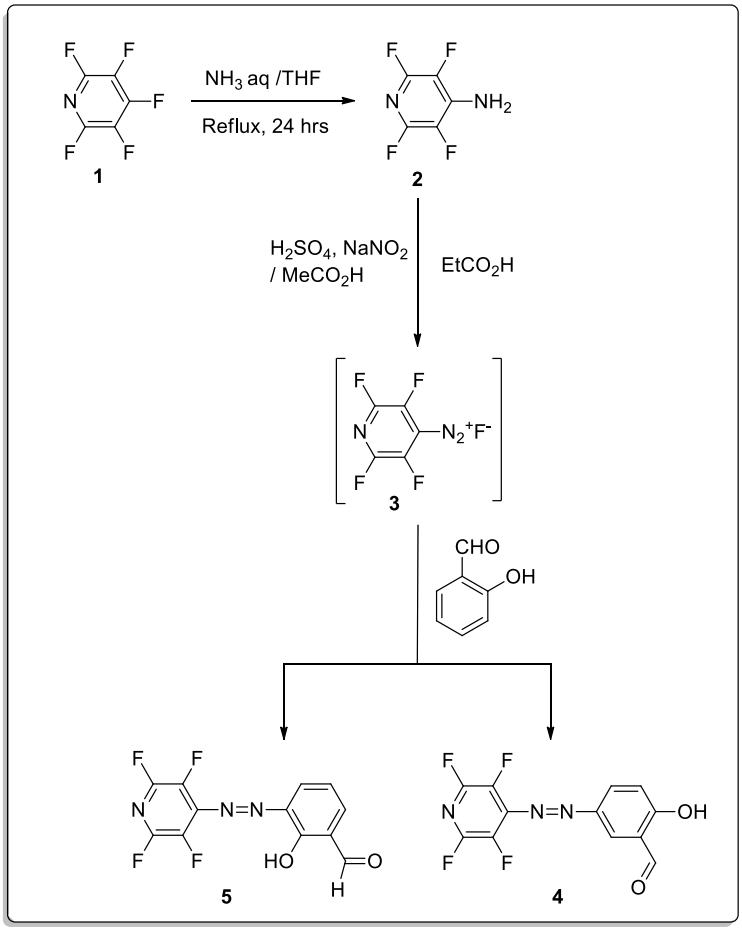
The present work is aimed mainly to synthesize new fluorinated azo-compounds and Schiff bases. Thus Pentafluoropyridine **1** have been aminated to the compound 4-amino-2,3,5,6-tetrafluoropyridine **2** and then diazotized to the corresponding diazonium **3**. The resulting diazonium ions coupled, *in situ*, to salicylaldehyde giving the corresponding azo-compounds: 2-hydroxy-5-(2',3',5',6'-tetrafluoropyridylazo)benzaldehyde **4** and 2-hydroxy-3-(2',3',5',6'-tetrafluoropyridylazo)benzaldehyde **5** as red crystals in 85 yield. The purity of these azo-compounds were estimated by TLC technique while their structures were established by the usual spectroscopic methods such as A UV, IR, MS and ^{1}H NMR. Fluorinated azo-compound **4** coupled readily to salicylaldehyde resulting a new fluorinated base Schiff: 2-hydroxy-5-(2',3',5',6'-tetrafluoro-pyridylazo)phenyl N-Sulphanilamide-1-imine **6** in 40% yield. The purity of this product was established by its IR, NMR, and Mass spectra.



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Heterocyclic Letters 10: iss.-1 (2020), 21-28

A comprehensive experiment of corrosion inhibition by overdue medicines to carry out the environmental education

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The corrosion problems of metallic materials, especially steel materials, almost exist in all aspects of industrial production especially in oil field, resulting in huge economic losses. Common medicines contain amino, carboxyl and phenolic hydroxyl groups, which can coordinate with metal through the empty orbit and adsorbed on the metal surface. Based on the structural characteristics of commonly used medicines, the experiment of using the overdue commonly used medicines as a corrosion inhibitor was designed and the mechanism of corrosion inhibition was discussed. In this experiment, the corrosion inhibition effect of common medicines on steel in hydrochloric acid solution was evaluated by weight loss method. It helps students deepen the understanding of theoretical knowledge of metal corrosion and protection, and get the comprehensive training and analysis ability and innovative ability training of relevant experimental skills. At the same time, the medicine, as daily used resources, can be used as experimental materials, which can cultivate the concept of comprehensive utilization of students.

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Bismuth Nitrate-Catalyzed Michael Reaction of Indoles and Sequential Reactions in a One-Pot Method

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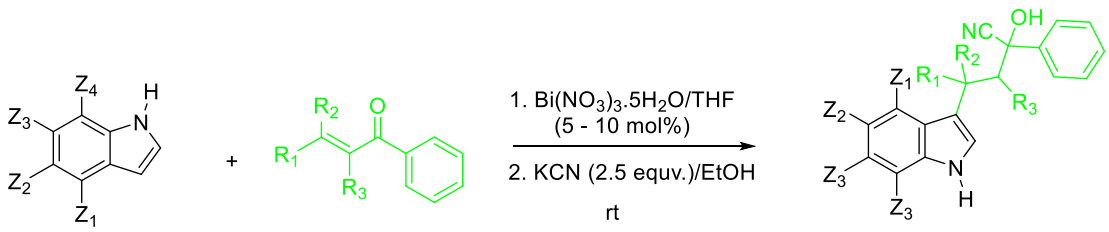

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Heterocyclic Letters 10: iss.-1 (2020), 39-45

One-pot syntheses of 1H-Pyrazolo[1,2-b]phthalazine-5,10-diones in Molten TBAB

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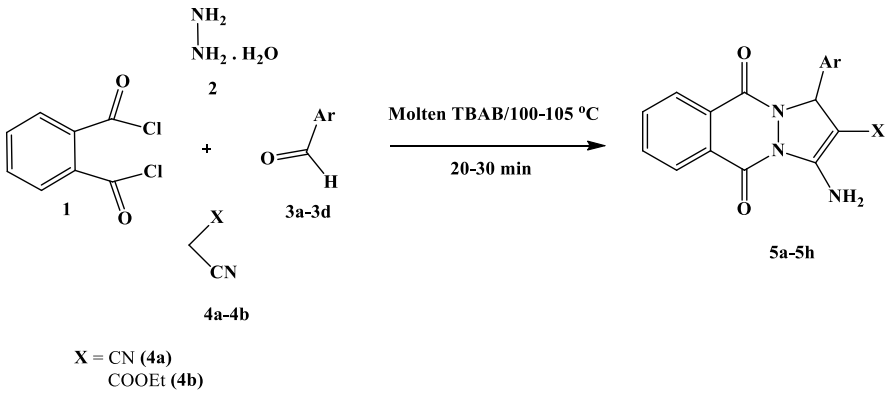
One-pot, four component syntheses for the preparation of 1-H Pyrazolo[1,2-b]phthalazine-5,10-diones **(5a-5h)** have been achieved from phthaloyl dichloride **(1)** , hydrazine hydrate **(2)**, benzaldehydes **(3)** and malononitrile **(4a)** or ethyl cynoacetate **(4b)** in molten Tetrabutylammonium Bromide as medium at 100-105 ^{o}C for 20-30 min by in-situ generation of HCl as a catalyst. These reactions have an easy workup, provide excellent yields, and use TBAB as the reaction medium.



X = CN **(4a)**
COOEt **(4b)**

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$COFE_2O_4$-NPS catalytic action in the synthesis of 2-substituted 4(3*h*)-quinozolinones subsidiaries from isatoic anhydride

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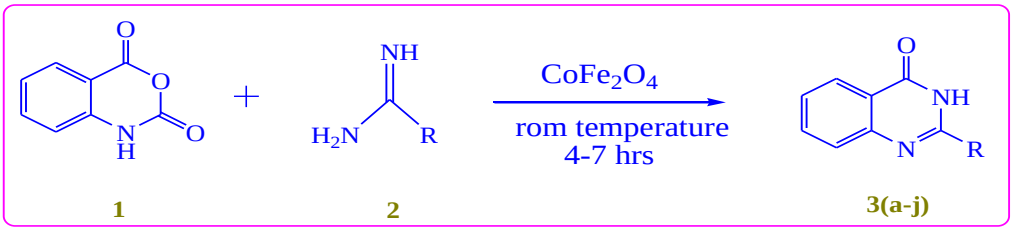
**Corresponding Author E-mail: thirvenivsu@gmail.com*

A profoundly productive synthesis of 2-substituted 4(3H)-quinazolinones is explained utilizing $CoFe_2O_4$-NPs catalyzed coupling of isatoic anhydride and benzamidine subordinates at room temperature. This reaction continues under mellow conditions. This technique was seen as better strategy giving high yields. The present technique gives a few advantages, for example, short response times and upgraded selectivity. The Structures of the Compounds are affirmed by ^{1}H NMR and ^{13}C NMR, Mass spectral information.

Scheme I



Synthesis of 2-Substituted Quinazolinone derivatives

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Synthesis by macrocyclization of peptide in presence of phosphate-buffered saline (pbs) using novel method

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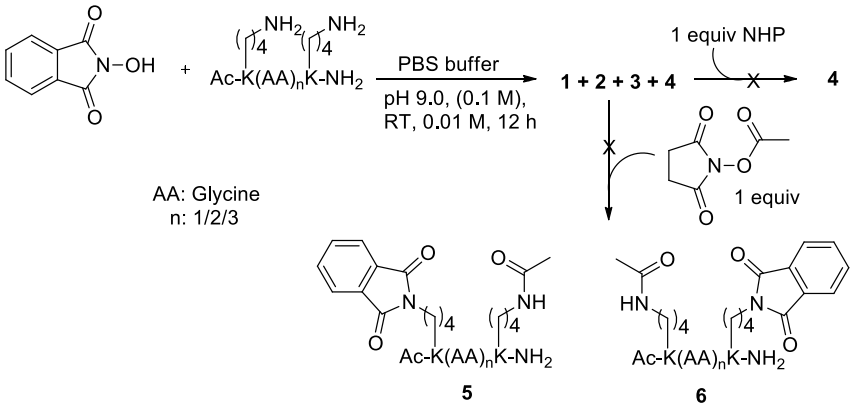
***Corresponding Author**: - abhijitbachute327@gmail.com*

We have introduced a novel way for synthesis by peptide macrocyclization of lysine pair using side chain macrocyclization method in presence of phosphate-buffered saline (PBS).



Heterocyclic Letters 10: iss.-1 (2020),

Synthesis and antioxidant activity of novel pyrimidine derivatives

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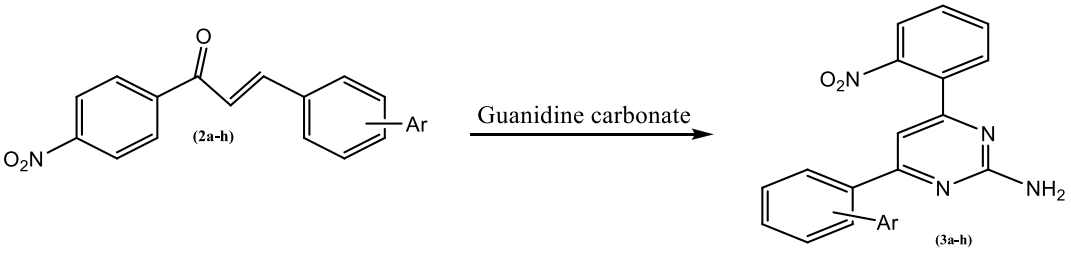
Email: revan@nitte.edu.in

Chalcones undergoes selective cyclization with guanidine carbonate to yield the title compounds pyrimidine derivatives. All the new compounds were subjected for in-vitro antioxidant activity. Some of the compounds exhibited promising activity.



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Buteamonosperma gum mediated microwave synthesis of gold nanoparticles and their catalytic activity

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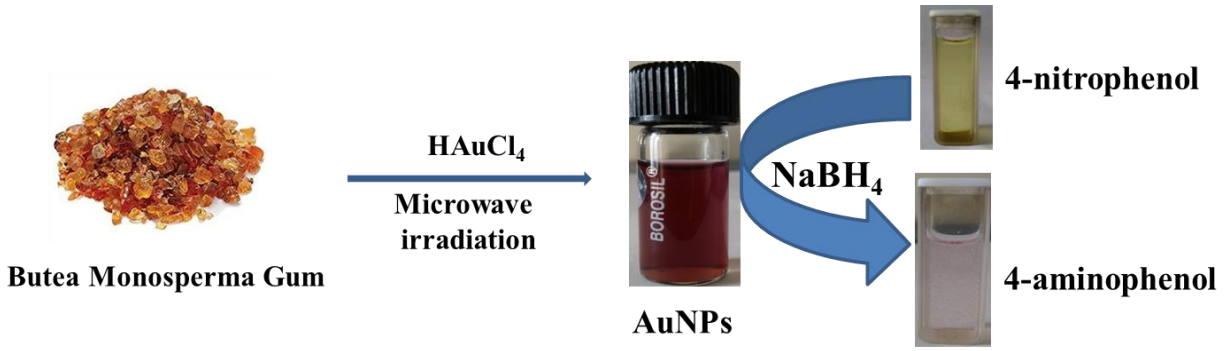
The present study aim to establish a novel green route for the rapid synthesis of gold nanoparticles (AuNPs) using *Buteamonosperma* gum (BMG) by microwave irradiation method. Here the BMG act as a reducing as well as a stabilizing agent. Synthetic conditions such as concentration of BMG, concentration of gold ions (Au^{3+}) and microwave irradiation time were optimized to get the best AuNPs. Prepared AuNPs were thoroughly characterized using UV-Visible, FTIR spectroscopy, XRD and TEM. The UV-Vis spectrum of AUNPs shows a Surface Plasmon Resonance peak at 525 nm. XRD studies indicate that synthesized AuNPs are crystalline nature and TEM revealed spherical shapes with an average particle size of 12 ± 2 nm. Furthermore the synthesized AuNPs exhibited good catalytic activity for the reduction of p-Nitrophenol (4-NP) to p-Aminophenol (4-AP) in the presence of $NaBH_4$. The antibacterial activity of synthesized AuNPs are studied against four bacteria. AuNPs shows positive antibacterial activity against klebisellapneumonia and negative antibacterial activity against stayphylococusaureoous,basilusbtilis andEscharesiaecoli.



Design, Synthesis and Microbial Activity of Some Novel 4,6-diphenyl-2-amine pyrimidine Derivatives

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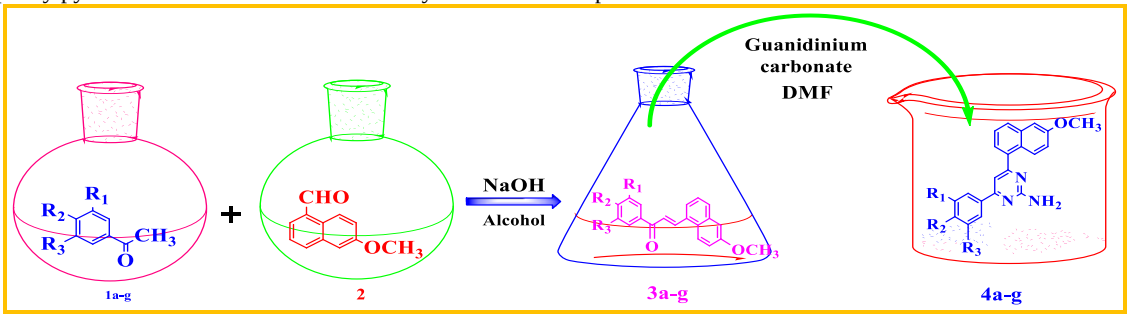
A series of some novelpharmacological active molecule 2-aminepyrimidine derivativesi.e.substituted 4-(6-methoxynaphthalen-1-yl)-6-phenylpyrimidin-2-amine derivatives were synthesized which possesses excellentto moderate antibacterial and antifungal



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A new LC-MS/MS method for determination of cabozantinib and nivolumab in rat plasma

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Based on liquid-liquid extraction a simple, accurate, precise bio analytical method has been developed. Validated for quantification of Cabozantinib and Nivolumab in rat plasma has been established in this methodology. Simple isocratic chromatographic condition and mass spectrometric detection has been demonstrated using this method with a QTRAP-5500 system. Linear range 2-40 mg/ml was identified during validation for Cabozantinib, whereas, Nivolumab linear range is 0.5-10 mg/ml. In addition, we have also reported the intraday precision and interday precision % RSD values for Cabozantinib and Nivolumab. Finally we have identified the overall recovery for Cabozantinib is 98.5% and Nivolumab is 99.2%.

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Synthesis and antimicrobial study of some novel benzothiazepine derivatives containing pyrazole moiety

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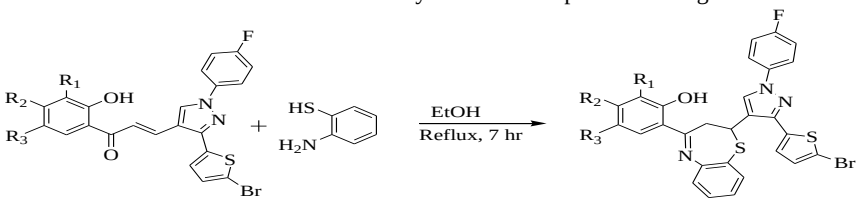
Some novel benzothiazepine derivatives containing pyrazole moiety are synthesized from various chalcones and 2-aminothiophenol in ethanol under reflux condition for 7 hours. The synthesized compounds have been characterized by their spectral characteristics (^{1}HNMR, IR, Mass). All newly synthesized compounds were identified and using disc diffusion method, antimicrobial activities were screened. Most of the synthesized compounds show good antibacterial and antifungal activity.



1(a-h) **2(a-h)**

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Design, Synthesis, Characterization, and Anti-microbial Activity of Novel 3-Chloro-2-oxo-4-Substituted phenylazetidinone and 2-Substituted phenylthiazolidinone-1, 8-Naphthalimide Derivative Spacers.

Rambabu Sirgamalla, and *Sakram Boda.

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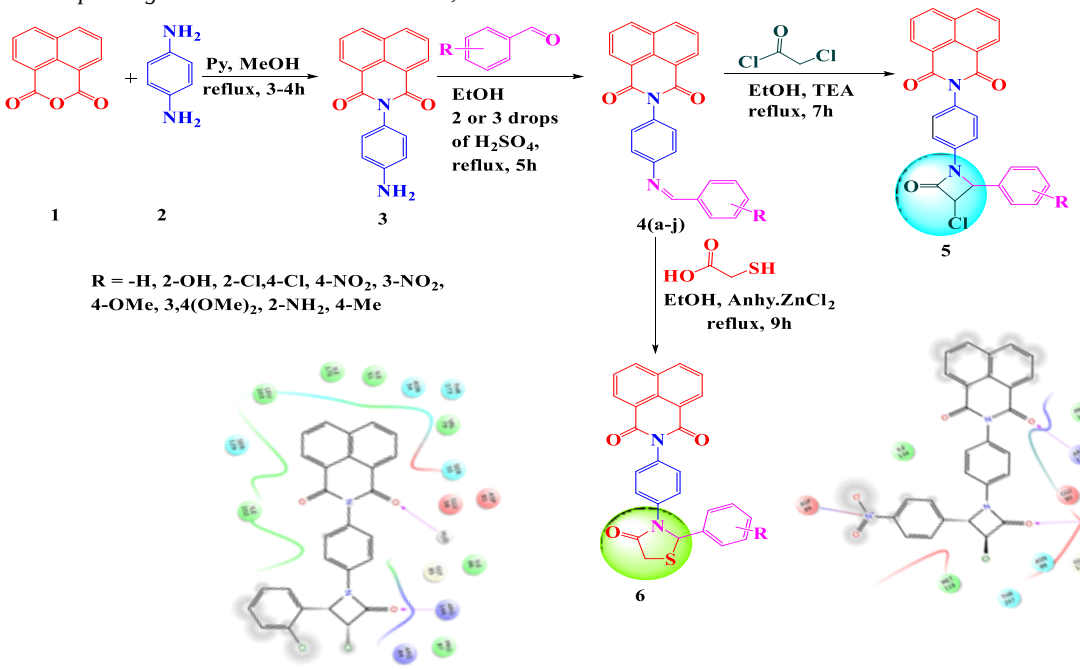

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Synthesis of substituted pyrrolizidine alkaloid derivatives using magnetically separable $nife_2o_4$ nanoparticles

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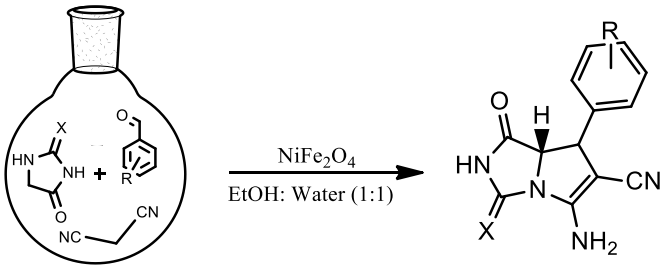
A series of pyrrolizidine alkaloid derivatives were synthesized by multicomponent reaction of Malononitrile, substituted Aryl-aldehydes and 2-Thiohydantoin/Hydantoin in the presence of magnetically Nickel-ferrites nanoparticles and Ethanol:Water(1:1) as a solvent under reflux condition.Nickel ferrite can be recovered easily using an external magnetic field and reused four times with unaltered catalytic activity, making them efficient. These catalysts can have a wide range of applications due to their efficiency, ease of handling, and cost effectiveness.



Inhibition effect of areca catechu extract on zinc in 0.5m hydrochloric acid solution

Sumalatha K and Jathi Ishwara Bhat*

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The extract compositions of boiled aqueous extract of tender areca nut were investigated by GC-MS and FTIR studies. Its corrosion inhibition efficiency on zinc was studied in 0.5M HCl solution using gravimetric and electrochemical methods of corrosion analysis. Ten distinct compounds were identified from GC-MS analysis. And these identified phytochemicals were further confirmed by FTIR investigations. All the studies uncover that the extract contains hydroxyl, amine, carboxyl, double bonds in it. The gravimetric studies revealed that aqueous tender areca nut extract is effective additive for the corrosion of zinc at all the concentrations. Inhibition efficiency of the extract increments with increment in the concentration of the extract. The electrochemical strategies, such as polarization study indicate that extract inhibit both anodic and cathodic corrosion reaction. From the Nyquist plot clearly indicate that charge transfer resistance increases and double layer capacitance diminishes as ascend in extract concentrations. This is a direct result of the adsorption of the active chemical compounds present in the extract on to the surface of the zinc metal there by it reduces the corrosion rate and act as a green corrosion inhibitor. This process of inhibition was additionally affirmed by SEM results.

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REVIEWS

Heterocyclic Letters 10: iss.-1 (2020),

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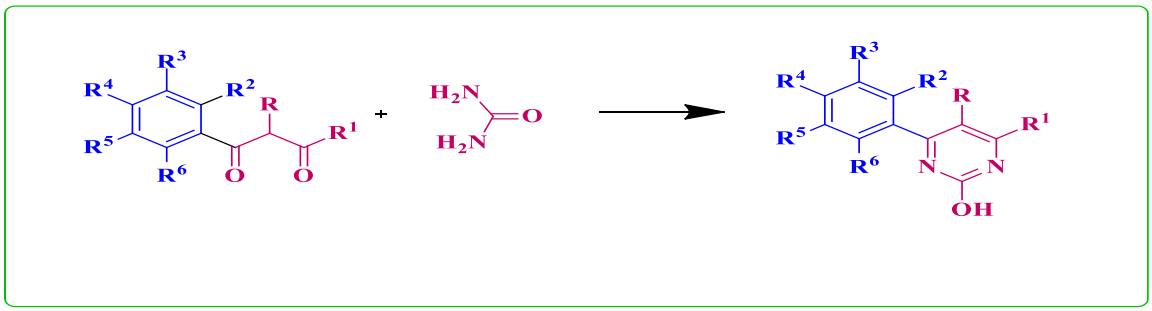
Pyrimidines derivatives were synthesized via cyclocondensation of 1,3-dicarbonyl derivatives with urea



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Synthesis, reactions, and properties of chalcones

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Chalcones, α, β-unsaturated ketones attached to two aromatic rings (ring A and B) (Figure 1), plentiful to fit for human consumption plants. Chalcones have several biological activities including antiviral, antibacterial, anti-inflammatory, antifungal, anticancer, antioxidant, analgesic, antiulcer, antimalarial and anthelmintic, and thus comp and consequently incorporate rise a class with critical therapeutic potential. The Michael addition is a completely vital reaction in natural chemistry formation of C-C, C-N, C-S, C-O and C-P bonds. The conjugate because it allows at addition of thiols to α, β-unsaturated carbonyl compounds is known thia-Michael addition, which is a key reaction for the synthesis of *β*-mercapto carbonyl compounds.