Graphical Abstract

Palladium catalyzed mono- and diarylation of 2-methylquinolines.

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Reactions of 2-methylquinolines with aryl iodides in the system Pd(OAc)\(_2\) (5 mol.%) / dppb (1,4-bis(diphenylphosphino)butane) (10 mol.%) / t-BuOK (1.3 eq.) in toluene afforded mono- and diarylated products in yields up to 44 %.

Synthesis of some new pyrazolo [1,5-a] pyrimidines and their CNS activity

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3-amino-4-phenylpyrazole condenses with appropriate fluorinated 1,3-diketone in absolute ethanol in presence of piperidine to give pyrazolo [1,5-a] pyrimidines. The structures of all these compounds have been confirmed by their IR, \(^1\)H NMR, \(^19\)F NMR, mass spectral data and elemental analysis. Compounds have been found to possess CNS depressant activity.
Synthesis and Biological Activities of 3-{6-[3-(substituted phenyl)-1-phenyl-1H-pyrazol-4-yl]-2-thioxo-1,2,5,6-tetrahydropyrimidin-4-yl]-2H-chromen-2-ones

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A series of 3-{6-[3-(substituted phenyl)-1-phenyl-1H-pyrazol-4-yl]-2-thioxo-1,2,5,6-tetrahydropyrimidin-4-yl]-2H-chromen-2-ones (4a-d) have been prepared by cyclisation of chalcones (3a-d) with thiourea. The structures of these newly synthesized compounds have been confirmed on the basis of elemental analyses and spectral studies. The newly synthesized compounds have been screened for their antimicrobial and antioxidant activities.

\[
\begin{align*}
3a-d & \\
\text{a: } R_1 = R_2 = H & \text{b: } R_1 = CH_3, R_2 = OCH_3 \\
\text{c: } R_1 = H, R_2 = NO_2 & \text{d: } R_1 = OH, R_2 = H
\end{align*}
\]

An efficient one pot synthesis of 3-phenyl and 3-naphthylcoumarins using microwave irradiations

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Microwave assisted an efficient modification of Perkin method has been obtained for the synthesis of 3-phenyl and 3-naphthylcoumarins by reacting 2-hydroxy benzaldehydes with phenylacetic anhydride/naphthylacetic anhydride in presence of activated barium hydroxide in DMSO medium.
Synthesis (Z)-3-(3-chloro-2-oxo-4-phenyl azetidin-1-yl)-4-(2′-(4′-substituted phenyl) hydrazono)-1-((5-thioxo-4,5-dihydro-1,3,4-oxadiazol-2-yl)methyl)-1H-pyrazol-5(4H)-one derivatives.

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In present investigation, we have synthesised the Substituted 1, 3, 4-Oxadiazoles with oxophenylazetidine and pyrazoline ring systems to enhance the required biological activity. We have synthesised the required biologically active molecules by easily ongoing, cost effective, easily reproducible and feasible synthetic routs. Innovate synthetically most important and active molecules towards targeted diagnostic diseases and exhibit antibacterial, anticonvulsant, anticancer activities. The structures of all these compounds have been confirmed by IR, ¹H NMR, and elemental analysis.
Synthesis, Characterization And Biocidal Activity Of Novel Halogenated 4-[(Substituted-Benzothiazol-2-Yl) Hydrazono]-2-(Substituted-Phenyl)-5-Methyl/Ethoxy-2,4-Dihydro-Pyrazol-3-One Derivatives

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Some new 4-[(substituted-benzothiazol-2-yl)hydrazono]-2-(substituted-phenyl)-5-methyl/ethoxy-2,4-dihydro-pyrazol-3-one(4) have been synthesized by reacting substituted 2-amino benzothiazol (1) with acetoacetic ester and malonic ester (2). 2-[(substituted-benzothiazol-2-yl)hydrazono]-3-oxo-butyric acid ethyl ester and 2-[(substituted-benzothiazol-2-yl)hydrazono]-malonic acid diethyl ester (3) react with different hydrazines to give the title compounds(4)and evaluated for antifungal and insecticidal activities.

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A new copper-catalyzed pathway to benzo and pyridyl fused imidazo-, triazo- and pyrimido-thiazines

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A simple one flask method for the selective preparation of benzo and pyridyl fused imidazo[2,1-b][1,3]thiazines, [1,2,4]triazolo[5,1-b][1,3]thiazines, and pyrimido[2,1-b][1,3]thiazin-6-ones from corresponding thiols and o-halobenzyl bromides or 2-bromo-3-chloromethylpyridine in the system solid KOH / Cul / TBAB / DMF has been developed.
Synthesis of derivatives of 8H-indeno[1,2-d]thiazol-2-amines via α-bromo, α,α-dibromo and α-tosyloxy carbonyl compounds

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Synthesis and cytotoxicity of 4-[(E)-hetaryl-vinyl]-6,6-dimethyl-2-oxo-1,2,5,6-tetrahydro-pyridine-3-nitriles

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A detailed investigation of condensation of 4,6,6-trimethyl-2-oxo-1,2,3,4-tetrahydropyridine-3-nitrile with heteroaromatic aldehydes in the presence of catalytic amounts of NaOH in EtOH were presented. 4-[(E)-Hetaryl-vinyl]-6,6-dimethyl-2-oxo-1,2,5,6-tetrahydro-pyridine-3-nitriles were isolated in 50-97\% yields. The cytotoxicity of studied compounds towards HT-1080 (human fibrosarcoma), MG22A (mouse hepatoma) and 3T3 9 (mouse embryonic fibroblasts) were presented. 4-[(E)-2-(6-Bromo-2-pyridyl)-vinyl]-6,6-dimethyl-2-oxo-1,2,5,6-tetrahydro-pyridine-3-nitrile exhibit high activity against MG-22A cancer cell line.

Microwave-Assisted Synthesis of 1,3,4-Oxadiazoles containing pyrazolones

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A simple synthesis of 2- aminothiophenyl-4H,5H-[1]-benzo pyrano[4,3-b]pyran-3-carbonitriles and evaluation of antibacterial activity


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Synthesis of novel densely functionalized 2-amino-4-thiophenyl-4H,5H-[1]-benzo pyrano[4,3-b]pyran-3-carbonitriles 3a-e has been accomplished by the Michael addition of malononitrile to the \( \alpha,\beta \)-unsaturated -3-thiophenylidene-4-chromanones 2a-e. The antibacterial activity of new compounds evaluated.

\[
\begin{align*}
2a-e & \quad \text{Malononitrile} \\
& \quad \text{Piperidine, EtOH} \\
3a-e &
\end{align*}
\]

\[\text{R= OCH}_3, \text{R}_1=\text{H} \quad a) \quad \text{R= H, R}_1=\text{Cl} \quad b) \quad \text{R= H, R}_1=\text{Br} \quad c) \quad \text{R= Cl, R}_1=\text{H} \quad d) \quad \text{R= Br, R}_1=\text{H} \quad e)
\]

**Scheme-1**

**REVIEWS**

**Recent Developments in Fluorination Chemistry of DAST with Special Reference to Alcohols**

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Dedicated to late Prof. V. N. Pathak

Fluorine containing organic compounds have influenced both medicinal and agrochemical fields. The presence of fluorine or a fluorine containing group causes notable changes in the physical and chemical properties of ordinary organic compounds. The most significant method to introduce fluorine into organic compounds is the nucleophilic replacement of oxygen with fluorine. Diethylaminosulfur trifluoride (DAST), Bis(2-methoxyethyl)aminosulfur trifluoride (BAST) or deoxofluor are the popular fluorinating reagents. By the use of these reagents, organic compounds that contain oxygen in hydroxyl and carbonyl groups are readily converted into their corresponding fluorinated analogues by the introduction of one or two fluorine atoms respectively. Our interest in applying various synthetic methods to incorporate fluorine or a fluorinated group into a large variety of organic compounds encouraged us to summarize the recent chemistry of DAST.