Catalyst Free in Aqueous Medium Olefination of 1-Methyl-4-hydroxyquinolinone under Microwave Irradiation Method

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3-Benzilidene quinolones have been synthesized by Knoevenagel condensation reactions starting from 1-methyl-4-hydroxyquinolinone with substituted aromatic aldehydes. Olefination of N-methyl 4-hydroxy quinolinone have been successfully carried out in aqueous medium under microwave irradiation method. An expeditious reaction was carried out under the microwave irradiation technique with good to excellent yield (92-98 %). The proposed method is environmentally benign, mild and simple protocol for the synthesis of chalcone of 4-hydroxy quinolondione (3a-l). The final products were characterized by \textsuperscript{1}H NMR, \textsuperscript{13}C NMR, Mass and elemental analysis as spectral property.

\textbf{Keywords: Olefination, 4-Hydroxyquinolondione, Knoevenagel condensation reaction, Microwave irradiation.}
Diastereoselective Synthesis of both Symmetrical (E,E)- and (Z,Z)-Conjugated Dienes Based on Stereodefined Alkenylboronate Esters

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2-([E]-1-Alkenyl)-1,3,2-dioxaborinanes prepared from the hydroboration of terminal alkynes with dibromoborane-methyl sulfide complex followed by treatment with 1,3-propane diol readily react with copper(I) bromide-methyl sulfide in the presence of a hindered base such as potassium-t-butoxide at 0 °C to afford (E,E)-symmetrical conjugated dienes. The dienes are formed with retention of configuration in a highly stereospecific manner predetermined from the alkenylboronate esters stereochemistry. Since the hydroboration of alkynes with dialkylboranes proceeds in a highly regio- and stereospecific manner under mild conditions, this then provides a direct route from acetylenes to the corresponding [E,E]-conjugated dienes. The recent accessibility of 2-([Z]-1-alkenyl)-1,3,2-dioxaborinanes also allows preparation of stereochemically pure [Z,Z]-conjugated dienes. The reaction is shown to probably proceed through an alkenylcopper (I) intermediate, which undergoes thermal dimerization to yield the corresponding stereodefined symmetrical dienes. The present procedures allow the preparation of either (E,E)- or (Z,Z)-symmetrical conjugated dienes in good yields and in high stereo-chemical purities (> 98 %).

Keywords: Diastereoselective synthesis, Conjugated dienes, Alkenylboronate esters.
Stereospecific Synthesis of Both (E)-and (Z)-1,3-Alkenynes Based on Stereodefined Alkenylboronate Esters

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The stereodefined synthesis of 1,3-alkenynes based on in situ generated stereodefined alkenylcopper reagents is presented. The hydroboration of alkynes with dibromoborane-methyl sulfide complex followed by treatment with trimethylene glycol provides stable (E)-1-alkenylboronate esters. These boronate esters readily undergo “ate” complexes with a hindered base such as potassium-\(t\)-butoxide. The transmetalation of the alkynyl group from boron to copper via the “ate” complexes retains the original stereochemistry defined from the starting alkenylboronate esters. The effect of representative bases on stereodefined alkenylboronate esters and subsequent reaction of these boronate esters in the transmetalation reaction with copper(I) bromide-methyl sulfide is investigated. The resulting stereodefined alkenylcopper species generated in situ readily couple with 1-bromo-1-alkynes to give the corresponding 1,3-alkenynes with retention of stereochemistry. Since (Z)-1-alkenylboronate esters are easily accessible, both cis and trans isomeric 1,3-alkenynes are synthesized.

Keywords: Stereospecific synthesis, 1,3-Alkenynes, Alkenylboronate esters.
Antioxidant, Catalytic Reducing and Anticancer Properties from Hydrothermally Green Synthesized Ginger Derived Carbon Nanodots

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Carbogenic carbon nanodots containing curcuminoids and 6-gingerol layers with bulk of resonating non bonded electrons were synthesized using simple and green hydrothermal method from natural herb ginger. As synthesized carbon nanodots were characterized using UV-visible and photoluminescence spectroscopy, IR, DLS and TEM analysis. The antioxidant, catalytic reducing and anticancer properties of carbon dots were studied using \textit{ex vivo} KMnO$_4$ reduction assay, catalytic 4-nitrophenol reduction test and \textit{in vitro} MTT assay on MCF-7 cell line, respectively. These carbogenic carbon nanoparticles shown quantum particle size of 4 nm. The green synthesized carbon dots shown excellent \textit{in vitro} biological antioxidant and anticancer properties along with reducing nature. This study exhibited the novelty of these green synthesized bioactive carbon nanodots for tagging and coating of bioactive materials for drug vectorization, biodetection, biocompatible cell targeting and biological applications.

\textbf{Keywords: Ginger carbon dots, Antioxidant, Reducing, Anticancer, MCF-7 cell line.}
Reactions, Anticancer, Antialzheimer and Anti COX-2 Activities of Newly Synthesized 2-Substituted Thienopyridines(II)

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3-Amino-4-(2-thienyl or 2-furyl)-6-pyridin-3-ylthieno[2,3-b]pyridine-2-carbonitriles and 3-amino-4-(2-thienyl or 2-furyl)-6-pyridin-3-ylthieno[2,3-b]pyridine-2-carboxamides (\textit{1a-d}) were used as the starting materials in the present study. The newly synthesized pyridothenopyrimidine, pyridothenotriazine and pyridothenoxazine were obtained through the reactions of compounds \textit{1a-d} with each of carbon disulfide, formic acid, triethyl orthoformate, acetic anhydride and nitrous acid, respectively. The newly synthesized heterocyclic compounds were tested as anticancer, antialzheimer and anti COX-2 agents and their structures elucidated by considering the data of IR, \textsuperscript{1}H NMR, mass spectra as well as that of elemental analyses.

**Keywords:** Triethylorthofomate, Dimethylformamide-Dimethylacetald, Pyridothenopyrimidinone, Pyridothenotriazinone, Pyridothenopyrimidine-dithione, Pyridothenopyrimidinethione.
Physico-Chemical and Phytochemical Analysis of *Euphorbia prostrata*

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The present study aimed to standardize the crude drug from *Euphorbia prostrata* by doing qualitative and quantitative analysis of plant pulverized parts and extracts. Physico-chemical analysis such as moisture content, total ash, water insoluble ash, sulphated ash, acid insoluble ash and water and alcohol extractives was done on powdered raw material. The moisture content and ash values were found within the recommended range (moisture content 5 % and ash value 10.5 %). The value of water soluble extract was higher as compared to acid soluble extractives. Percentage yield was found to be highest in methanolic solvent. The phytochemical analysis *i.e.* total lipids, total proteins and carbohydrates of crude powder showed that lipids and proteins contents were high.

**Keywords:** *Euphorbia prostrata*, Primary and secondary metabolites, Quantitative analysis.
Dramatic Rate Acceleration of Baylis-Hillman Reaction with Fe$_3$O$_4$ Magnetic Nanoparticles and 1,8-diazabicyclo[5.4.0]undec-7-ene in Solvent Free Medium

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The Baylis-Hillman reaction was greatly accelerated in the presence of Fe$_3$O$_4$ magnetic nanoparticles as an efficient and reusable co-catalyst and 1,8-diazabicyclo[5.4.0]undec-7-ene in a solvent free medium. A preliminary kinetic study revealed that the relative rate of the reaction using Fe$_3$O$_4$ magnetic nanoparticles was considerably faster than that of reaction without Fe$_3$O$_4$ magnetic nanoparticles. In this protocol the use of nanocatalyst provided a green, useful and rapid method to generate the Baylis-Hillman adducts in short reaction times and excellent yields (82-94 %).

Keywords: Baylis-Hillman reaction, Rate acceleration, Fe$_3$O$_4$ magnetic nanoparticles, 1,8-Diazabicyclo[5.4.0]undec-7-ene, Solvent free medium.