

Department of Chemistry

Numbers of 'Book chapters' in edited volumes in national/international Journals published by the staff from 2016-17 to 2020-21

Sl. no	Name of the teacher	Title of the book/ chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National/ international	Year of publications	ISBN/ISSN No. Of proceedings	Affiliating institute at the time of publications	Name of the publisher
1	T. R. Ravikumar Naik	Organic Synthesis - A Nascent Relook	Therapeutic significance of 1,4-Dihydropyridine compounds as potential anticancer agents	-----	-----	International	2020	ISBN- 978-1-78985-944-	Veerashai va College	Intech Open, publications
2	T. R. Ravikumar Naik	Biomolecules	Synthesis and antioxidant activity of sulfur and selenium substituted quinolines	-----	-----	International	2021	ISBN- 8170197022	Veerashai va College	TTPP
3	T. R. Ravikumar Naik	Nano materials: Synthesis, Characterization & Applications (Volume - 1)	Microwave-Assisted Synthesis, Magnetic Properties and Antifungal Activity of ZnFe ₂ O ₄ Nanoparticles.	-----	-----	International	2022	ISBN-	Veerashai va College	Atkins

Chapter

Therapeutic Significance of 1,4-Dihydropyridine Compounds as Potential Anticancer Agents

Tangali Ramanaik Ravikumar Naik

Abstract

A series of 1,4-dihydropyridines have been prepared from a three-component one-pot condensation reaction of β -diketonates, an aromatic aldehyde, and ammonium acetate under microwave irradiation. The reaction is performed using crystalline nano-ZnO in ethanol under microwave irradiation (CEM discover). A wide range of functional groups was tolerated in the developed protocol. The present methodology offers several advantages such as simple procedure, greener condition, excellent yields and short reaction time. The synthesized compounds were evaluated for DNA photocleavage, SAR analysis and molecular docking studies. The compound (**4b**, **4c**, **4h**, **4i**, **4n** and **4o**) showed potent DNA cleavage activities compared to other derivatives. The molecular interactions of the active compounds within the binding site of B-DNA were studied through molecular docking simulations; the compound (**4b**, **4c**, **4h**, **4i**, **4n** and **4o**) showed good docking interaction with minimum binding energies. All synthetic compounds were characterized by different spectroscopic techniques.

Keywords: 1,4-Dihydropyridines, DNA photocleavage, molecular docking, SAR analysis, ZnO nanoparticle

1. Introduction

Facile and efficient synthesis of biological active molecules is one of the main objectives of organic and medicinal chemistry. In recent years, multicomponent reactions have become one of the important tools in the synthesis of structurally diverse chemical libraries of drug-like polyfunctional organic molecules [1–4]. Furthermore, MCRs offer the advantage of simplicity and synthetic efficiency over conventional chemical reactions in several aspects. MCRs allow the construction of combinatorial libraries of complex organic molecules for an efficient lead structure identification and optimization in drug discovery [5–10].

In continuation of our ongoing research work on microwave assisted synthesis of nano materials [11, 12] we have found that, nano-crystalline metal oxides have attracted considerable attention of synthetic and medicinal chemists because of their high catalytic activity and reusability [13–25]. Zinc oxide is an inexpensive, moisture stable, reusable, commercially available and is non-toxic, insoluble in polar as well as non-polar solvents [26–31]. A wide range of organic reactions that include Beckmann rearrangements [32], N-benylation [33], acylation [34], dehydration of oximes [35], nucleophilic ring opening reactions of epoxides [36],

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SYNTHESIS AND ANTIOXIDANT ACTIVITY OF SULFUR AND SELENIUM SUBSTITUTED QUINOILINES

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Abstract

Novel sulfur and selenium substituted quinolines carrying thiazole moieties have been synthesized and confirmed on the basis of their spectral data (IR, ¹H-NMR and mass). The *in vitro* free radical scavenging properties of these newly synthesized compounds were examined by determining the capacity to scavenge superoxide anion formation and the interaction with the stable free radical 2,2-diphenyl-1-picrylhydrazyl (DPPH) and nicotinamidoadenine-dinucleotide (NADH). The superoxide anion scavenging activity of compounds at 10⁻¹ M concentrations is 76% and 78%. The results shows that, the compound containing selenium moiety is the most effective scavenger of 2,2-diphenyl-1-picrylhydrazyl (DPPH) stable free radical at 10⁻³M (22-90 %a) concentration.

Keywords: Quinolines; Selenium; Sulfur; DPPH; NADH; H₂O₂; Hydoryl radical; Reducing power; Antioxidant

NANOMATERIALS

SYNTHESIS, CHARACTERIZATION & APPLICATIONS

Volume - 1

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Chapter - 3 Microwave-Assisted Synthesis, Magnetic Properties and Antifungal Activity of $ZnFe_2O_4$ Nanoparticles

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