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SYNTHESIS, ANTIOXIDANT AND ANTICANCER ACTIVITY OF NEW QUINOLINE-[1, 2, 4]-TRIAZOLE HYBRIDS

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ABSTRACT

A set of quinoline coupled triazole derivatives was synthesized using substituted quinoline hydrazide and isothiocyanate derivatives. The structures of the synthesized molecules were confirmed using spectral techniques like FTIR, ^{1}H & ^{13}C NMR spectroscopy. Novel triazole thione derivatives were subjected to anticancer and antioxidant activity. The studies revealed the moderate anticancer activity of the molecules but have shown potent antioxidant activity.

Keywords: Quinoline-[1, 2, 4]-triazole, Molecular Hybrids, Anticancer Activity, Antioxidant Activity.

INTRODUCTION

The 1, 2, 4-triazoles are the vital units of an exigent class of heterocycles. They offer outstretched pharmacological benefits as antimicrobial, anticancer, antioxidant and several other applications.[1-3] In the recent progress in medicinal chemistry, the synthesis of various 3-mercapto-1, 2, 4- triazole derivatives have gathered a considerable attraction owing to their significance in the field of medicinal chemistry.[4-8] The biological activities exhibited by the 3-mercapto-1, 2, 4- triazoles is found to be because of the presence of =N-C-S moiety.[9]

On the other hand, quinolines are another important heterocyclic member that grabbed the attention of many researchers owing to its wide spectrum of pharmaceutical application.[10-13] In the present work, 5-chloro-8-hydroxy quinoline is derivatized which is an analog of a clioquinol (a broad-spectrum antibacterial and antifungal agent). Structural modification of the basic skeleton would help in the identification of new lead molecules to fight against life-threatening diseases like cancer.[14] Not much work has been done on the development of 1, 2, 4-triazole-quinoline hybrid. Shaker[15] reviewed the most important procedures for the synthesis of 3-mercapto-1, 2, 4- triazoles. It is reported that the 3-mercapto-1, 2, 4- triazole has proved to be a rich source of various heterocyclic compounds. Fascinated by the biological profiles of triazoles and quinolines, we have designed and synthesized a new series of hybrid molecules that would produce a synergistic effect which also helps in the development of potential therapeutic agents. Recent findings reported that the antioxidants help in reducing the metastasis by reducing reactive oxygen species in cancer cells.[16] This prompted us to test the newly synthesized compounds for their *in vitro* anticancer and antioxidant activity.

EXPERIMENTAL

Chemicals were purchased commercially and were used as such without any purification. The reaction progress was monitored with the help of Thin-layer chromatography (TLC). Aluminum sheets precoated with alichrosep silica gel-60/UV_{254} was used as a stationary phase with iodine and UV light as visualizing agents. The melting point was checked using Thiele's tube in an open capillary tube. Functional group identification was done by FTIR spectra which were recorded on Shimadzu Infrared spectrometer (8400s)

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