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Article

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Synthesis of coumarin based triazolyl thiazolidinones and their apoptotic inducer activity against caspase-3

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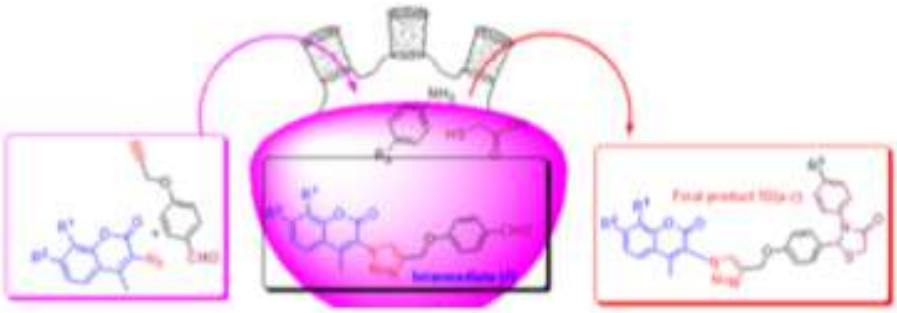
ABSTRACT



Coumarin, triazoles and thiazolidinones are one of the most preferred and high valued scaffolds frequently used in medicinal chemistry. The synthesis of newly designed coumarin based triazolyl-thiazolidinones was performed and new compounds were obtained in good yields. The listed compounds were evaluated for their apoptotic activity and determined the minimal inhibitory concentrations for each of the compound on SCC-4 cells using MTT viability test. Furthermore, apoptotic inducer activity was assayed by detecting the expression of caspase-3, a key apoptotic enzyme.

Keywords: Triazolyl, Thiazolidinones, Apoptotic inducer activity, anti-cancer, anti-tumor, breast cancer.

INTRODUCTION

Apoptosis or programmed cell death is the phenomenon, which regulates the cellular pathway responsible for the elimination of damaged or biologically discarded cells.[1,2] Dysregulation of apoptosis is a hallmark of human cancer.[3] Targeting key apoptosis regulators that overcome the evasion of apoptosis is an exciting medicinal strategy for the treatment of human carcinomas.[4,5] Activation of cell surface death receptors, irradiation, lack of survival factors, anticancer agents, and ischemia[6] are some of the apoptotic stimuli, which induces signaling cascades that activate the caspase family of cysteine-dependent aspartate-directed proteases. There are two basic types of caspases *viz initiators and executioners*. These caspases play a key role in apoptotic process, as they are needed to execute programmed cell death accordingly.[7] Design of the molecules that could ameliorate disease-associated down stream of apoptosis, drug discovery efforts were directed towards the inhibition of caspase activity, particularly the effector caspase-3.[8] However, caspase-3 inhibitors have encountered problems in their pharmacological development.[9] Alternatively, protein-protein interactions upstream of caspase activation are also an

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