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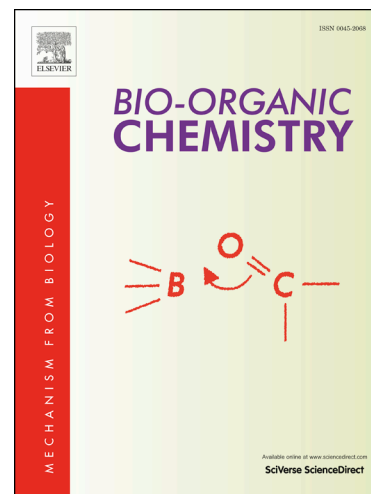
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Imidazopyridine linked triazoles as tubulin inhibitors, effectively triggering apoptosis in lung cancer cell line

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Abstract: A library of new imidazopyridine linked triazole hybrid conjugates (**8a-r**) were designed, synthesized and evaluated for their cytotoxicity against four cancer cell lines namely, human lung (A549), human prostate (DU-145), human colon (HCT-116) and breast (MDA-MB 231) cancer. These conjugates exhibited good to moderate activity against the tested human cancer cell lines. Two of the conjugates (**8g** and **8j**) showed significant antitumor activity against human lung cancer cell line (A549) with IC₅₀ values of **0.51**μM and **0.63**μM respectively. Flow cytometry analysis revealed that these conjugates arrested the cell cycle at G₂/M phase in human lung cancer cell line (A549). Immune-histochemistry and tubulin polymerization assay suggest inhibition of tubulin. Hoechst staining, annexin V and DNA fragmentation by tunnel assay suggested that these compounds induce cell death by apoptosis. Overall, the current study demonstrates that the synthesis of imidazopyridine linked triazole conjugates as promising anticancer agents causing G₂/M arrest and apoptotic-inducing ability.

Keywords: imidazopyridine, triazoles, tubulin, apoptosis, lung cancer

Introduction

Microtubules are important part of endoskeleton and play a key role in diverse cellular processes such as cell formation, cell division, regulation of motility; maintenance of cell shape, secretion and cytoplasmic transport, thus making microtubules an important target for anticancer drugs [1-3]. Furthermore, microtubules play a significant role in cell signalling pathways which are accountable for cellular apoptosis. The dynamics of this heterodimeric polymer is regulated by various important proteins such as dynein and kinesin [4]. Various

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