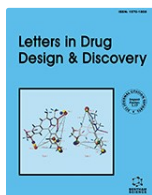




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Research Article

(Substituted)-benzo[b]thiophene-4-carboxamide Synthesis and Antiproliferative Activity Study

Author(s): Chandrakant Dhondiram Pawar, Dattatraya Navnath Pansare and Devanand Baburao Shinde*

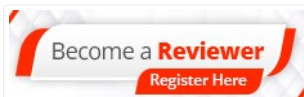
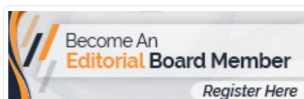
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Abstract

Background: Thiophene ring forms important building block in medicinal chemistry. Literature reveals that thiophene ring in combination with different groups shows different activity. By keeping these things in mind we have designed and synthesized a new series of amide and sulfonamide coupled thiophene. A series of novel substituted 3-sulfamoylbenzo[b]thiophene-4-carboxamide molecules containing sulfonamide and amide group were designed, synthesized and used for anti-proliferative activity study.

Methods: The final compounds 16-36 were synthesized by using series of reactions comprising sulfonation, sulfonamide coupling, hydrolysis and peptide coupling. The yields of compounds 16-36 are in the range of 90-98%. The structures of the synthesized compounds were elucidated and

confirmed by ^1H NMR, ^{13}C NMR, LCMS and the purity was checked through HPLC analysis. The compounds were further tested for their *in vitro* anticancer activity against a series of cell lines A549, HeLa, MCF-7 and Du-145.

Results: The intermediates 8-13, 15 and final compounds 16-36 were synthesized in good yields. The synthesized compounds were further tested for their anticancer activity and most of compounds showed moderate to good anticancer activity against all four cell lines.

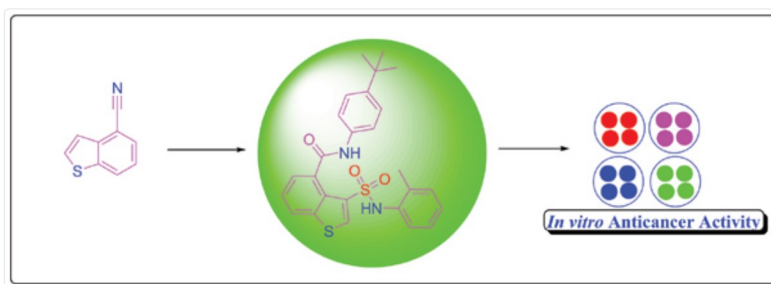
Conclusion: We have synthesized 21 compounds and were screened for anticancer activity against MCF-7, HeLa, A-549 and Du-145 cancer cell lines. Most of the compounds were active for tested cell lines with IC_{50} value in the range of 1.81 to 9.73 μM . The compounds 18, 19, 21, 25, 30, 31 and 33 are most active in cell line data with IC_{50} value in the range of 1.81 to 2.52 μM .

Keywords: [Sulfonamide](#), [benzo\[b\]-thiophene-4-carboxamide](#), [anticancer activity](#), [anti proliferative activity](#), [\$^1\text{H}\$ NMR](#), [\$^{13}\text{C}\$ NMR](#).

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