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Facile Synthesis of Novel Substituted Aryl-Thiazole (SAT) Analogs via One-Pot Multicomponent Reaction as Potent Cytotoxic Agents against Cancer Cell Lines

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Abstract : In this study twenty-five (25) newly synthesized compounds substituted aryl thiazoles (SAT) 1-25 were synthesized, and in vitro cytotoxicity of these compounds was evaluated against four cancer cell lines namely, MCF-7 (ER+ve breast), MDA-MB-231 (ER-ve breast), HCT116 (colorectal), and, HeLa (cervical) and compared with the standard anticancer drug doxorubicin with IC50 value of 1.56 ± 0.05 µM. Among them, compounds 1, 4-8 and 19 were found to be active against all four cell lines. Compound 20 was found to be selectively active against MCF7 cells with IC50 value of 40.21 ± 4.15 µM, whereas compound 19 was active against only MCF7 and HeLa cells with IC50 values of 46.72 ± 1.8 and 19.86 ± 0.11 µM, respectively. These results suggest that aryl thiazoles 1 and 4 deserve to be investigated further in vivo as anti-cancer agents.

Keywords : anticancer agents, breast cancer cell lines (MCF7, MDA-MB-231), colorectal cancer cell line (HCT-116), cervical cancer cell line (HeLa), Thiazole derivatives
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