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Topic of Research: Synthesis, Characterization and Biological Evaluation of Heterocyclic Derivatives

Findings

Rapid growth of cancer patients has become a major threat across the globe as it still remains incurable, despite immense efforts are made to untangle numerous tumour pathophysiology. Though current available treatment strategies like surgery, radiotherapy, chemotherapy etc. are feasible for metastatic cancer, they have restraints in patients who subsequently develop an acquired resistance. The limited potency of existing marketed anticancer drugs entreats for newer target-specific hybrid molecules to combat cancer. The anti-cancer drug discovery paradigm "one-compound-one-target" has failed and subsequently shifted to molecular hybridisation technique to design and develop agents. This hybridisation approach helps in unveiling newer anticancer agents with improved biological activity, selectivity, and lesser side effects profile, distinct from their individual components. In this context, Novel heterocyclic compounds were synthesized using molecular hybridisation approach. The present thesis describes the design, synthesis, characterization, and biological evaluation of novel heterocyclic derivatives. This is followed by the detailed discussion of the synthetic methodology used, biological evaluation, and the structural elucidation of the synthesized compounds by FT-IR, NMR, mass and elemental analysis data. In addition, *in-silico* ADME profiling of all the final compounds and molecular docking of the selected potent compounds were also performed with the DNA protein.