Potential of Heterocyclic Compounds as EGFR-TK Inhibitors in Cancer Therapy

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Abstract Over the last few decades, cancer has become deadliest diseases worldwide. Vascular Endothelial Growth Factor Receptor (VEGFR), Human Epidermal Growth Factor Receptor-2 (HER-2) and Epidermal Growth Factor Receptor (EGFR) are among the many growth moieties available on the cell surface. Cell signaling pathways such as angiogenesis, metastasis, cell proliferation, and apoptosis depend on the EGFR. The heterocyclic compounds containing nitrogen, sulfur, and oxygen atoms have a remarkable ability to change their physiochemical and biological characteristics. There are many biological activities related with pyrazoline, pyridine, chromone, quinoline, quinazoline, coumarin, pyrazole, imidazole, indole, pyrimidine, and thiazole, including EGFR-TK inhibitors as anti-neoplastic drugs. This chapter provides an overview of potential heterocyclic EGFR-TK inhibitors with mechanistic and in silico investigations on structure activity relationship (SAR). It aids in creating novel EGFR-TK inhibitors with therapeutic promise. The creation of new potent and unique medication candidates with improved selectivity and efficacy will receive a boost from ongoing research and development.

Keywords Heterocycles · Epidermal Growth Factor Receptor (EGFR) · Quinoline · Pyrazole · Pyrimidine · Coumarin · Mutation · Non-Small Cell Lung Cancer (NSCLC) · Cytotoxicity

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