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Design, Synthesis and Biological Evaluation of 2-Anilinopyrimidine-Based Selective Inhibitors Against Triple Negative Breast Cancer Cell Line

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Triple negative breast cancer (TNBC) is a subtype of breast cancer that is phenotypically defined by the absence of estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2). This subtype accounts for about 15% to 20% of all diagnosed breast cancers. TNBC is characterized by highly aggressive and intractable subtype due to its unique molecular profile, high cell proliferation and distinct metastatic patterns. Although TNBC currently can be treated with chemotherapy, approximately 20% of patient with TNBC responds to standard chemotherapy. Until now, no approved targeted therapy is available for TNBC.

In connection with development of novel anticancer agents for TNBC, an in-house chemical library was screened in a luminal type breast cancer and an EGFR over-expressed TNBC cell lines using a dose dependent MTT assay. A hit compound was identified that exhibited anticancer activity in both cell lines equal to that of gefitinib, representative EGFR tyrosine kinase inhibitor. On the structural basis of a hit compound, a novel series of 2-anilinopyrimidines was designed and synthesized. Cell viability of newly prepared analogs was intensively evaluated and then selective and potent inhibitors against TNBC cell line were developed.

Biography:

Hwayoung Yun did undergraduate and work at Seoul National University. He have intensively experienced the synthesis of complex small molecules through the studies on total synthesis of various natural products such as macrolides, alkaloids, iridoids, macrolactams and polypeptides. A range of academic training and an in-depth research experience have provided him with considerable expertise in biomedical disciplines including synthetic organic, medicinal chemistry and chemical biology. His ultimate research interests are the discovery of bioactive small molecules as selective regulators of intracellular signaling pathways and investigation of their biological mode of action.