Title: Molecular Docking, Synthesis and Biological Evaluation of New Benzimidazole-Pyridine Derivatives as Potential Aromatase Inhibitor for the Treatment of Cancer

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Abstract: This study describes the synthesis of N5-(4-(1H-benzo[d]imidazol-2-yl)phenyl)-N2-phenylpyridine-2,5-diamine derivatives from Orthophenylenediamine (1) and 4-aminobenzoic acid (2) and all the synthesized chemical moieties screened against a panel of cancer cell lines resulted in the identification compound 6 a with good anti-cancer potential and a GI50 of 2.95 μM, 3.35 μM, 2.27 μM, 8.46 nM and 1.56 μM against MDAMB-231, MCF-7, A-549, NCI-H23 and A-498 respectively. As the second greatest cause of death globally, cancer continues to pose a serious threat to public health. An essential enzyme called aromatase catalyses the last, rate-limiting step in the production of oestrogens. As a well-researched endocrine therapeutic strategy, aromatase inhibitors (AIs) efficiently block the production of oestrogen, which is necessary for aromatase activity.

Keywords: Benzimidazole derivatives, Pyridine-2,5-diamine, Aromatase inhibitors, Anticancer agents, Cytotoxicity, GI50, Cancer cell lines

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