Chem Sci J 2017, 8:3 (Suppl)
DOI: 10.4172/2150-3494-C1-012

Design and synthesis of new cytotoxic phthalazine derivatives

Nehal E M AbulNasr, Kamilia M Amin, Flora F Barsoum and **Fadi M Awadallah**
Cairo University, Egypt

Phthalazine is an interesting bioactive core, many compounds based on phthalazine nucleus were reported to possess significant anticancer activity, among which are PTK787 and AAC789 that are promising VEGFR-2 inhibitors. To continue our previous study, new compounds were designed and synthesized using phthalazine ring as a nucleus by incorporating different 1, 3 diphenylallylidene moieties linked to position 1 of phthalazine ring through a hydrazine bridge. Aiming to develop novel cytotoxic agents, target compounds were prepared as depicted in scheme 1. Where 1-hydrazinyphthalazine 4 was reacted with several previously prepared chalcones 9a-f in absolute ethanol and catalytic amount of glacial acetic acid to yield this new series of compounds 3a-f that were tested for anticancer activity against 14 cancer cell lines, showing remarkable cytotoxic activity with IC_{50} in the nanomolar range. Further research was conducted through studying their enzymatic inhibitory activity against VEGFR-2 and EGFR kinases, results revealed more potent inhibition of VEGFR-2 comparable to EGFR suggesting that pathway to be the main mechanism of anticancer activity of these compounds. The most active derivatives were 10a, 10d and 10f, with IC_{50}=0.42, 0.55 and 0.41 nM, respectively against VEGFR-2.

nehal.essam@hotmail.com