Design and synthesis of new Quinoxaline derivative as anticancer agent and apoptotic inducer

Nasser Saad ,Aliya M. S. El Newahie , Yassin M. Nissan , Dalal A. Abou El Ella , Sohair M. Khojah and Khaled A.M. Abouzid

Abstract

The quinoxaline scaffold is a promising platform for the discovery of active chemotherapeutic agents. Three series of quinoxaline derivatives were synthesized and biologically evaluated against three tumor cell lines (HCT116 human colon carcinoma, HepG2, liver hepatocellular carcinoma and MCF-7, human breast adenocarcinoma cell line), in addition to VEGFR-2 enzyme inhibition activity. Compounds VIId, VIIIa, VIIIc, VIIIe and XVa exhibited promising activity against the tested cell lines and weak activity against VEGFR-2. Compound VIIIc induced a significant disruption in the cell cycle profile and cell cycle arrest at the G2/M phase boundary. In further assays, the cytotoxic effect of the highly active compounds was determined using a normal Caucasian fibroblast-like fetal lung cell line (WI-38). Compound VIIIc could be considered as a lead compound that merits further optimization and development as an anti-cancer and an apoptotic inducing candidate against the HCT116 cell line

Molecules 2019, March