ABSTRACT

A series of unique dispiro analogues containing an oxindole pyrrolidine 8-nitroquinolone hybrid has been obtained through a one-pot three-component 1,3-dipolar cycloaddition of azomethine ylides generated in situ from the condensation of isatins and benzylamine with (E)-3-arylidene-2,3-dihydro-8-nitro-4-quinolones. The structures of the newly synthesized compounds were characterized by using different spectroscopic techniques and by X-ray diffraction studies of their regio- and stereochemistry. All the synthesized compounds were screened for in vitro cytotoxic activity against the human cervical cancer cell line HeLa. The compounds have exhibited potent inhibition against human cervical cancer cells and insignificant toxicity to normal cells. The compounds **6d**, **6a**, **6h**, **6b**, and **6e** induced apoptosis of HeLa cells, through ROS influx. The expression levels of proteins involved in the mitochondrion-related pathways were detected, and Western blot analysis showed that apoptosis occurred via activation of caspase-3.