Synthesis, in vitro cytotoxic evaluation and apoptosis inducing study of (Z)-3-benzyldene-1-(morpholinomethyl)indolin-2-one derivatives against human cancer cell lines

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Abstract: Unlimited and uncontrolled cell proliferation is characteristic of tumor cells [1,2]. Disruption of cell cycle has a crucial role in cancer progression [3], as a result of this carcinogenesis can be controlled by agents which have an effect of cell proliferation. Thus various natural and synthetic agents are gaining widespread attention due to their cell cycle regulation and modulation activity [4]. In fact, all the suspected contributory factors for oncogenesis and mutagens, such as viruses and inherited predisposing factors have been shown to impair G1 checkpoint function. Consequently, more than half of all human cancer cells with impaired G1 checkpoint function rely on the G2 checkpoint to survive against the DNA damage which most cytotoxic cancer treatments cause. We now report synthesis, in vitro cytotoxic evaluation and apoptotic inducing study of (Z)-3-benzyldene-1-(morpholinomethyl)indolin-2-one derivatives against human cancer cell lines (Scheme 1). The pharmacological results indicated that most of the tested compounds displayed excellent selective cytotoxic activity against PC3 and MCF7 cell lines with IC\textsubscript{50} values in the micro-molar level. In the best case, the anti-cancer potency against PC3 cell line was almost improved 3.6-times over the reference drug.

Keyword: (Z)-3-benzyldene-1-(morpholinomethyl)indolin-2-one derivatives, cancer cell line