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Effects of New Anthraquinone Derivatives on Resistance Ovarian Cancer Cells and The Mechanism Investigation

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Abstract : At initiation stage, there are no symptoms at initiation stage; however, at late stage, patients suffer symptoms as soon as ovarian cancer metastasis. Moreover, ovarian cancer cells are resistant to some anti-ovarian cancer drugs in clinical. Thus, it is very important to find an effective treatment for resistant ovarian cancer. Anthraquinone derivatives are able to induce DNA damage and lead to cell apoptosis, so several derivatives have been used for clinical application. Therefore, to explore more effective anti-ovarian cancer drugs, this study investigates the mechanism of three new anthraquinone compounds bearing different functional groups to camptothecin-resistance ovarian cell line A2780R2000. Cell viability was determined by MTT assay after treating A2780R2000 with the three new anthraquinone compounds. The results indicated that IC50 values are 33.44μM (Compound I), 25.77μM (Compound II) and 24.59μM (Compound III). Next, through cell cycle analysis, the results demonstrated that three new anthraquinone compounds not only induced A2780R2000 cell cycle arrest at early stage but also apoptosis at late stage. Besides, through apoptosis assay, the results indicated new anthraquinone compound induced apoptosis at late stage. Furthermore, the results of western blot show that the three new anthraquinone compounds lead to A2780R2000 apoptosis through intrinsic pathway. Theses results suggested that three new anthraquinone compounds may be potential new drugs for clinical cancer treatment in the future.

Keywords : anthraquinone, camptothecin, resistance, ovarian cancer
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