# Toxic Effects of New Thiazolidine-Diketopiperazine Hybrid Molecules on Cancer Cells

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**Introduction.** Cancer is the second cause of death in the worldwide after the heart disease, affecting 8.2 million of people in the year 2012, from these 5.3 million in less developed regions. **Objective:** With the goal to identify new active compounds against cancer, we assessed the cytotoxic activity of a series of new 3-aryl-thiazolo[3,4-a]pyrazine-5,8-diones on different cancer cell lines: Hep-G2 hepatocellular carcinoma cells, A549 lung adenocarcinoma cells, HeLa cervical adenocarcinoma cells and B16F10 melanoma cells. **Material and Methods:** The cells were plated in a culture medium (EMEM, 10% foetal bovine serum and antibiotics) to give $1x10^4$ cells/well in 96-well dishes. After incubation for 24 h at 37 °C in a 5% $CO_2$ humidified incubator, the supernatant was removed and the cells were incubated with varying concentrations of compounds (5, 25, 50 and 100 µM) for 48 h. Detection of cell viability was performed using the MTT reagent and the concentration (µM) required for the reduction of cell viability by 50% ($CC_{50}$) was calculated by the Prism 5 software. **Results and Discussion:** Twelve compounds were tested for each cell line and only two showed significant toxicity on B16F10 cells: (3RS,8aR)-7-(4-chlorobenzyl)-3-(4-nitrophenyl)tetrahydrothiazolo[3,4-a]pyrazine-5,8-dione and (3RS,8aR)-7-(4-methylbenzyl)-3-(4-nitrophenyl)tetrahydrothiazolo[3,4-a]pyrazine-5,8-dione, with $CC_{50}$ of 20.9 and 29.9 µM, respectively. **Conclusion:** Results demonstrate that these thiazolidine-diketopiperazine derivatives have cytotoxic activity at lower concentrations on B16F10 cell line, in contrast to the other derivatives and cell lines investigated. These results motivate new researches about their mechanisms of action for future clinical tests against melanoma.

Keywords: cancer, thiazolidine-diketopiperazine hybrid molecules, cytotoxic activity.

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