

SYNERGISTIC EFFECTS OF TAURINE AND CISPLATIN ON LUNG CANCER CELLS (A549)

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Lung cancer is one of the most common types of cancer that causes death. In this study the effects of cisplatin, taurine and combination of these two compounds on A549 cell line were examined. A549 Cells were treated with different concentrations of taurine, cisplatin and the combination of two compounds. MTT assay, flow cytometry analysis of apoptosis and flow cytometry analysis of cell cycle were carried out. The expression of genes was examined by real-time PCR. Cisplatin and taurine reduced the viability of the A549 cell line but this effect was greater in taurine and cisplatin combination. Cells that were in G0/G1 stage increased in all treated group and this inhibition was notable in the combination group. The expression of some genes such as P53, Bax, caspase 3, caspase 9 and P14 increased. Our studies also showed that cisplatin and taurine combination was moderately synergic with CI values ranging from X to Y for Fa 0.5. Combination of cisplatin and taurine may be effective in the cancer therapy and it can be a suitable choice for reduction of drug resistance problems and other side effects of cisplatin high dosage, but more researches are needed to be performed in this field.

Key words: Cancer; Cell line; Cisplatin; Taurine; Drug-Resistance.

ПОВНА НАЗВА: СИНЕРГЕТИЧНИЙ ЕФЕКТ ТАУРИНУ І ЦИСПЛАТИНУ НА КЛІТИНИ РАКУ ЛЕГЕНЬ (A549)

Рак легень — це один з найпоширеніших видів раку, який призводить до летальності. У цьому

дослідженні вивчали вплив цисплатину, таурину та комбінації цих двох сполук на клітинну лінію A549. Клітини A549 обробляли різними концентраціями таурину, цисплатину та комбінації обох сполук. Було проведено МТТ-тест, вивчення апоптозу та клітинного циклу методом проточної цитометрії. Експресію генів вивчали за допомогою ПЛР у реальному часі. Цисплатин і таурин знижували життєздатність клітинної лінії A549, але кращим цей ефект був за використання комбінації таурину та цисплатину. Кількість клітин, які перебували на стадії G0/G1, збільшилась у всіх досліджуваних групах; це пригнічення було особливо помітним у групі з використанням комбінації сполук. Підвищилась експресія таких генів, як P53, Вах, каспаза 3, каспаза 9 та P14. Наші дослідження також показали, що комбінація цисплатину і таурину була помірно синергетичною, а значення CI були в діапазоні від X до Y для Fa 0,5. Комбінація цисплатину і таурину може бути ефективною в терапії раку й застосовним варіантом для зменшення проблем зі стійкістю до медичних препаратів та інших побічних ефектів високої дози цисплатину, але потрібно провести додаткові дослідження у цій сфері.

Ключові слова: рак, клітинна лінія, цисплатин, таурин, стійкість до медичних препаратів.

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