

纳米TiO₂光诱导杀伤 Bel-7402人体肝癌细胞研究

夏春辉¹, 王百齐², 王玉^{1,3}, 刘亚琴¹, 徐广有¹, 吴山¹

1. 齐齐哈尔医学院化学教研室, 齐齐哈尔 161042; 2. 哈尔滨工业大学应用化学系, 哈尔滨 150001; 3. 中国医科大学生物化学教研室, 沈阳 110001

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摘要 在光诱导条件下, 采用HE染色法和四甲基偶氮唑蓝比色法(MTT法), 研究了纳米TiO₂对Bel-7402人体肝癌细胞的杀伤作用, 考察了在不同纳米TiO₂浓度、不同光照时间下纳米TiO₂的抑瘤效果, 并且对抑瘤机制进行了探讨. 结果发现: 在光诱导条件下, 适宜的TiO₂浓度具有较高的抑瘤率, 同时抑瘤过程表现出类似一级反应的动力学规律; 在光诱导条件下, 纳米TiO₂产生的活性氧组分与癌细胞膜内外的生物大分子反应, 引起广泛的细胞结构破坏; 造成癌细胞内Ca²⁺离子稳态失去平衡; 引发细胞微管相关蛋白2(MAP-2)表达的变化, 促进微管发生重组, 从而导致细胞凋亡和坏死.

关键词 [纳米TiO₂](#) [光诱导杀伤](#) [肝癌细胞](#) [MAP-2](#)

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Damaging Effects of Nanosized TiO₂ on Bel-7402 Human Liver Cancer Cell Under Photoinduce

XIA Chun-Hui¹, WANG Bai-Qi², WANG Yu^{1,3}, LIU Ya-Qin¹, XU Guang-You¹, WU Shan¹

1. Chemistry Department, Qiqihaer Medical College, Qiqihaer 161042, China; 2. Department of Applied Chemistry, Harbin Institute of Technology, Harbin 150001, China; 3. Department of Biological Chemistry, China Medical University, Shenyang 110001, China

Abstract The damaging effects of nanosized TiO₂ on human Bel-7402 liver cancer cell were investigated by means of HE dye method and MTT colorimetric assay under condition of photoinduce. The influences of nanosized TiO₂ content, and irradiation time on cancer inhibition were systematically studied, and the inhibition mechanism was primarily discussed. The results show that nanosized TiO₂ exhibits good inhibition effects under appropriate TiO₂ concentration, and the inhibition process obeys first order reaction rule approximately; In addition, activity oxygen produced by nanosized TiO₂ under illumination can react with organic molecules in and out the cancer cell membrane, so that lead to damage cell structure, result into imbalance of Ca²⁺ in the cancer cell, and induce microtubule reassembly due to expression changes of microtubule-associated protein-2, which are responsible for the apoptotic and dead cancer cells.

Key words [nanosized TiO₂](#) [photoinduced-damage](#) [liver cancer cell](#) [MAP-2](#)

DOI:

通讯作者 夏春辉 chunhuixia1969@sohu.com

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