

[1]刘胜男,张德纯,张名均,等.纳米细菌促进乳腺癌细胞MDA-MB-231凋亡[J].第三军医大学学报,2013,35(16):1688-1691.

Liu Shengnan,Zhang Dechun,Zhang Mingjun,et al.Nanobacteria promotes apoptosis in breast cancer cell line MDA-MB-231[J].J Third Mil Med Univ,2013,35(16):1688-1691.

[点击复制](#)

纳米细菌促进乳腺癌细胞MDA-MB-231凋亡(PDF)分享

《第三军医大学学报》[ISSN:1000-5404/CN:51-1095/R] 卷: 35 期数: 2013年第16期 页码: 1688-1691 栏目: 论著 出版日期: 2013-08-30

Title: Nanobacteria promotes apoptosis in breast cancer cell line MDA-MB-231

作者: [刘胜男](#); [张德纯](#); [张名均](#); [郭亚楠](#); [杨晓容](#); [许舸](#)
重庆医科大学: 基础医学院病原生物学教研室, 分子医学与肿瘤研究中心, 生命科学院电镜组

Author(s): [Liu Shengnan](#); [Zhang Dechun](#); [Zhang Mingjun](#); [Guo Yanan](#); [Yang Xiaorong](#); [Xu Ke](#)
Center of Molecular Medicine and Tumor Research, Department of Pathogenic Biology, College of Basic Medical Sciences, Electron Microscopy Group, College of Life Sciences, Chongqing Medical University, Chongqing, 400016, China

关键词: [纳米细菌](#); [纳米羟基磷灰石](#); [凋亡](#); [乳腺癌](#)

Keywords: [nanobacteria](#); [nano hydroxyapatite](#); [apoptosis](#); [breast cancer](#)

分类号: R318.08;R73-354;R737.9

文献标志码: A

摘要: 目的 观察纳米细菌(nanobacteria,NB)与纳米羟基磷灰石颗粒(nano hydroxyapatite, nHAP)对乳腺癌MDA-MB-231细胞的影响。 方法 实验分为NB组、nHAP组和正常对照组,其中NB组和nHAP组悬液的浓度均为2麦氏浊度(M),正常对照组仅加培养基,与乳腺癌MDA-MB-231细胞共同培养24、48、72 h,通过CCK-8检测其对细胞的毒性作用;培养12、24、48、72 h,取上清,经全自动生化分析仪测定LDH活性;作用72 h,经流式细胞仪(flow cytometry, FCM)测定其凋亡率,透射电镜观察其超微结构的变化情况。 结果 CCK-8显示,NB组24、48、72 h对细胞的抑制作用均强于nHAP组和正常对照组,差异有统计学意义($P<0.01$);NB组LDH含量在24、48、72 h时均高于正常对照组,差异均有统计学意义($P<0.05$);24、48、72 h均高于nHA组,但仅24、48 h有统计学差异($P<0.05$)。nHAP组LDH活性仅在72 h与正常对照组比较有统计学差异($P<0.01$);72 h后NB组细胞凋亡率高于nHAP组,差异有统计学意义($P<0.01$);透射电镜下观察,NB组可以看到胞质空泡样变,核固缩以及明显的凋亡小体,nHAP组未见明显异常。 结论 NB可以抑制乳腺癌细胞的生长,促进其发生凋亡,其导致细胞凋亡的成分不仅仅是NB羟基磷灰石的外壳,也可能与NB的其他组分或代谢产物有关。

Abstract: Objective To determine the effect of nanobacteria (NB) and nano

导航/NAVIGATE

[本期目录/Table of Contents](#)

[下一篇/Next Article](#)

[上一篇/Previous Article](#)

工具/TOOLS

[引用本文的文章/References](#)

[下载 PDF/Download PDF\(1049KB\)](#)

[立即打印本文/Print Now](#)

[查看/发表评论/Comments](#)

[导出](#)

统计/STATISTICS

[摘要浏览/Viewed](#) 209

[全文下载/Downloads](#) 92

[评论/Comments](#)

[RSS](#) [XML](#)

hydroxyapatite (nHAP) on breast cancer cells. Methods Breast cancer MDA-MB-231 cells were treated by 100 µg/mL nHAP with a turbidity of 2 M and NB at a same turbidity for 12, 24 and 48 h, respectively. The MDA-MB-231 cells receiving no treatment served as normal control. CCK-8 assay was used to determine the toxic effect of NB and nHAP on the cells. The activity of lactate dehydrogenase (LDH) in the supernatant was measured after the treatment for 12, 24, 48 and 72h, respectively. In 72 h after the treatment, flow cytometry (FCM) was used to measure the apoptotic rates, and transmission electron microscopy (TEM) was employed to observe the ultrastructure of the cells. Results CCK-8 assay revealed that NB showed significantly stronger inhibition on the proliferation of MDA-MB-231 cells than nHAP treated and normal control cells after 24, 48 and 72 hours' treatment ($P<0.01$). NB also resulted in significantly higher LDH activity than normal control after 24, 48 and 72 hours' treatment ($P<0.05$). The activity level was still higher in NB treated cells than in nHAP treated ones, but there were statistical differences only in 24 and 48 hour' s treatment ($P<0.05$). Significant difference was also found in the LDH levels between nHAP treatment cells and control cells in 72 h ($P<0.01$). In 72 h after treatment, the apoptotic rates of the breast cancer cells were obviously higher in NB treated group than in nHAP treated group ($P<0.01$). TEM displayed that the MDA-MB-231 cells in NB group had cytoplasmic cavities, karyopyknosis and obvious apoptotic bodies. But no such change was found in the cells in the nHAP group. Conclusion NB inhibits the growth and promotes the apoptosis in breast cancer cells. It is due to not only hydroxyl apatite shell components, but also other components or metabolic products of NB.

参考文献/REFERENCES:

刘胜男, 张德纯, 张名均, 等. 纳米细菌促进乳腺癌细胞MDA-MB-231凋亡[J]. 第三军医大学学报, 2013, 35(16):1688-1691.

相似文献/REFERENCES:

[1]沈学成, 杨杰, 饶贤才, 等. 前列腺结石患者结石中纳米细菌的分离和16S rRNA基因的鉴定[J]. 第三军医大学学报, 2008, 30(02):124.

SHEN Xue-cheng, YANG Jie, RAO Xian-cai, et al. Nanobacteria: isolation from prostatic calculus and identification of its 16S rRNA gene[J]. J Third Mil Med Univ, 2008, 30(16):124.

[2]梁勇, 蒋电明. 纳米羟基磷灰石/聚酰胺66椎间融合器对山羊颈椎的融合效果研究[J]. 第三军医大学学报, 2007, 29(24):2333.

LIANG Yong, JIANG Dian-ming. In vivo study on intervertebral fusion cage made by nano hydroxyapatite and ployamide66 composites[J]. J Third Mil Med Univ, 2007, 29(16):2333.

[3]明爱民, 沈学成, 周占松, 等. 纳米细菌致III型前列腺炎的实验研究[J]. 第三军医大学学报, 2009, 31(11):1005.

MING Ai-min, SHEN Xue-cheng, ZHOU Zhan-song, et al. Nanobacteria induces Type III prostatitis in rats[J]. J Third Mil Med Univ, 2009, 31(16):1005.

[4]代震宇, 李军, 赵增辉, 等. 纳米羟基磷灰石/聚氨基酸复合材料生物安全性评价[J]. 第三军医大学学报, 2010, 32(21):2294.

Dai Zhenyu, Li Jun, Zhao Zenghui, et al. Biological safety of nano-hydroxyapatite and poly-amino acid compound[J]. J Third Mil Med Univ, 2010, 32(16):2294.

[5]沈学成, 杨杰, 饶贤才, 等. 前列腺结石患者结石中纳米细菌的培养和形态学鉴定[J]. 第三军医大学学报, 2008, 30(12):1122.

SHEN Xue-cheng, YANG Jie, RAO Xian-cai, et al. Culture and morphological identification of nanobacteria from prostatic calculus[J]. J Third Mil Med Univ, 2008, 30(16):1122.

[6]韦纪英, 贺于奇, 杨晶晶, 等. 富血小板血浆复合材料对种植体周骨缺损修复的影响[J]. 第三军医大学学报, 2011, 33(09):975.

[7]唐金元, 周占松, 沈学成, 等. III型前列腺炎纳米细菌快速检测方法研究及临床评价[J]. 第三军医大学学报, 2011, 33(06):608.

Tang Jinyuan, Zhou Zhansong, Shen Xuecheng, et al. Rapid detection and clinical evaluation of nanobacteria infection in type III prostatitis[J]. J Third Mil Med Univ, 2011, 33(16):608.

[8]杨俊, 陈治清, 胡常红. 壳聚糖/多壁碳纳米管复合膜诱导羟基磷灰石仿生合成的研究[J]. 第三军医大学学报, 2013, 35(14):1480.

Yang Jun, Chen Zhiqing, Hu Changhong. Biomimetic synthesis of nanoscopic hydroxyapatite induced by chitosan/multiwall carbon nanotube composites[J]. J Third Mil Med Univ, 2013, 35(16):1480.

