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Rho GTP酶在姜黄素抑制人肺癌细胞增殖和转移中的作用

Role of Rho GTPase in Inhibiting Metastasis and Proliferation Ability of Human Lung Cancer Cell Lines by Curcumin

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中文关键词: [肺癌细胞株](#) [增殖](#) [转移](#) [姜黄素](#) [Rho GTP酶](#) [微丝骨架](#)

英文关键词: [lung cancer cells](#) [proliferation](#) [metastasis](#) [curcumin](#) [Rho GTPase](#) [cytoskeleton](#)

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中文摘要:

目的 探讨姜黄素对人肺癌细胞株(A549)增殖和转移的影响, 并通过检测姜黄素对细胞内Rho GTP酶蛋白表达及细胞骨架重组的影响, 揭示Rho GTP酶在姜黄素抑制肺癌转移中的作用。方法 应用MTT法观察姜黄素对A549增殖能力的影响, 体外侵袭实验和迁移实验观察姜黄素对肺癌细胞转移的影响。Western blot和半定量RT-PCR法分别检测姜黄素对与细胞骨架重组相关的RhoA, Rac1, Cdc42蛋白和mRNA表达的影响。免疫荧光细胞化学法标记微丝, 激光共聚焦扫描显微镜观察姜黄素对细胞骨架重组的影响。结果 姜黄素能抑制A549细胞增殖, 增殖抑制率均随处理浓度增大和作用时间延长而增加。与对照组比较, 2.5, 5 $\mu\text{mol} \cdot \text{L}^{-1}$ 的姜黄素处理24 h后的A549细胞增殖抑制率较低, 但体外侵袭和迁移能力均显著下降($P < 0.01$)。姜黄素能显著下调RhoA, Rac1, Cdc42蛋白和mRNA表达($P < 0.01$), 并能明显影响细胞内微丝骨架的结构和分布。结论 姜黄素可通过下调 Rho GTP 酶基因表达, 调控肺癌细胞微丝骨架结构, 进而抑制体外增殖和转移能力。

英文摘要:

OBJECTIVE To investigate the effects of curcumin on the metastatic and proliferation ability of human highly metastatic ability lung cancer cell line A549, and explore the role of Rho GTPase in inhibiting lung cancer metastasis by curcumin. METHODS MTT assay was used to determine the effects of curcumin on the proliferation of A549 cells. Invasion assay, and migration assay were used to observe the effects of curcumin on the metastatic ability of A549 cells in vitro. Western blot and RT-PCR were used to observe the effects of curcumin on the expression of RhoA, Rac1, and Cdc42 proteins and mRNA in A549 cells. Laser confocal microscopy was used to investigate the effect of curcumin on the reorganization of the microfilaments marked by immunofluorescent cytochemistry technology. RESULTS Curcumin inhibited the proliferation of A549 cells, and the proliferation inhibition rate increased along with the increase of the concentration and treatment time. When treated with 2.5, 5 $\mu\text{mol} \cdot \text{L}^{-1}$ for 24 h, the effect of the proliferation inhibition of A549 cells was not significant, but the abilities of invasion and migration of A549 cells were inhibited significantly ($P < 0.01$). In parepell, curcumin significantly suppressed the expression of Rac1, Rac2 and Cdc42 proteins and mRNA ($P < 0.01$). Furthermore, it also influenced the distribution and structure of sytoskeletons. CONCLUSION Curcumin can inhibit the metastatic and proliferation ability of lung cancer cells through down-regulating the expression of Rho GTPase and regulating the cytoskeleton reorganization.

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