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论著

13-MTD通过激活MAPK途径和抑制Akt存活途径诱导乳腺癌MCF-7细胞凋亡

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摘要 目的： 探讨侧链饱和脂肪酸13-甲基十四烷酸(13-MTD)诱导人乳腺癌MCF-7细胞凋亡的作用机制。方法：140 mg/L 13-MTD处理体外培养的人乳腺癌MCF-7细胞和人乳腺正常细胞，采用流式细胞仪检测技术观察13-MTD对人乳腺癌MCF-7细胞凋亡的影响，免疫印迹法检测13-MTD处理后细胞内c-Jun氨基末端激酶(JNK），p38, Fas 相关死亡结构域蛋白(FADD)和丝氨酸/苏氨酸蛋白激酶(Akt)等蛋白磷酸化变化。结果：流式细胞仪实验结果显示13-MTD能有效地诱导人乳腺癌MCF-7细胞凋亡，但不引起正常人乳腺上皮细胞凋亡。免疫印迹检测显示经13-MTD处理后的人乳腺癌MCF-7细胞JNK和p38磷酸化蛋白明显增加，Akt磷酸化蛋白明显减少。结论：13-MTD是一个新的安全高效抗肿瘤药物，其作用机制可能是通过激活MAPK途径和抑制Akt存活途径来诱导肿瘤细胞凋亡。

关键词 乳腺肿瘤； 细胞凋亡 13-甲基十四烷酸

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13-MTD induces apoptosis of MCF-7 breast cancer cells by activating MAPK pathway and inhibiting Akt signaling

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Abstract

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［ABSTRACT］AIM: To study the effect of 13-methyltetradecanoic acid (13-MTD), a saturated branched-chain fatty acid, on apoptotic induction in breast carcinoma cell line MCF-7 and its underlying mechanisms. METHODS: Breast carcinoma cell line MCF-7 and normal breast epithelial cells MaEC were treated with solvent or 13-MTD at concentration of 140 mg/L. Apoptosis was analyzed by flow cytometry. Phosphorylation of JNK, p38, FADD and Akt after treated with 13-MTD were detected by Western blotting. RESULTS: 13-MTD effectively induced apoptosis of breast carcinoma cell line MCF-7 and no influence to normal breast epithelial cells MaEC, which were confirmed by flow cytometry analysis, was observed. The results of Western blotting showed that obvious increase in p38 and JNK phosphorylation. No significant difference of FADD phosphorylation was observed. However, evidently decrease in Akt phosphorylation was found after treated with 13-MTD. CONCLUSION: 13-MTD was a new safe, effective chemotherapeutic drug. Its underlying mechanisms are through activating MAPK pathway and inhibiting Akt pathway to induce the cancer cells apoptosis.</FONT>

Key words Breast neoplasms Apoptosis 13-methyltetradecanoic acid

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