

论著

槲皮素对结肠癌细胞SW480增殖、细胞周期和cyclin B1蛋白表达的影响

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摘要 背景与目的: 探讨槲皮素对人结肠癌细胞SW480增殖、凋亡、细胞周期及CyclinB1蛋白表达的影响, 并探讨其抗肿瘤机制。材料与方法: 以10、20、40、60、80、160 $\mu\text{mol/L}$ 的槲皮素处理SW480细胞, 采用MTT比色法、流式细胞技术、Western blot方法分析槲皮素对细胞增殖、凋亡、细胞周期及cyclin B1蛋白表达的影响。结果: 与对照组相比, 20 $\mu\text{mol/L}$ 槲皮素可促进SW480细胞增殖 ($P<0.05$), 但40、80、160 $\mu\text{mol/L}$ 的槲皮素可明显抑制SW480细胞的增殖($P<0.01$), 抑制作用呈剂量和时间依赖性。20、40、60、80 $\mu\text{mol/L}$ 的槲皮素作用SW480细胞48 h, G0/G1期和S期细胞减少, G2/M期细胞显著增多($P<0.01$)。80 $\mu\text{mol/L}$ 的槲皮素作用48 h后细胞凋亡率($13.32\pm 4.62\%$), 较对照组($2.68\pm 1.04\%$)显著升高($P<0.01$); 40、60、80 $\mu\text{mol/L}$ 的槲皮素作用SW480细胞48 h后, cyclin B1蛋白表达降低($P<0.05$)。结论: 槲皮素对结肠癌细胞SW480的增殖有一定的调节作用, 低浓度可促进其增殖, 而高浓度则可抑制其增殖, 其抑制作用机制可能与影响细胞周期分布、诱导细胞凋亡、调节cyclin B1蛋白表达有关。

关键词 槲皮素; SW480; 细胞周期; 细胞凋亡; cyclin B1

Effects of Quercetin on Proliferation, Cell Cycle and Cyclin B1 Protein Expression of Colon Carcinoma Cell Line SW480

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Abstract **BACKGROUND & AIM:** To investigate the effects of quercetin on proliferation, cell cycle and apoptosis of colon carcinoma cell line SW480 and to study its probable molecular mechanisms. **MATERIALS AND METHODS:** SW480 cells were treated with different concentrations of quercetin(10, 20, 40, 80, 160 $\mu\text{mol/L}$)for 24 h, 48 h and 72 h. Then the cell proliferation, cell cycle, apoptosis rate and cyclin B1 protein expression of SW480 cells were analyzed using MTT assay, flow cytometry and immunoblot methods, respectively. **RESULTS:** Proliferation of SW480 cells was promoted by quercetin at a concentration of 20 $\mu\text{mol/L}$ ($P<0.05$), while it was significantly inhibited by quercetin at concentrations of 40, 80, 160 $\mu\text{mol/L}$ ($P<0.01$), in a dose_ and time_ dependent manner. After treatment with 20, 40, 60, 80 $\mu\text{mol/L}$ quercetin for 48 h, the percentages of SW480 cells at G0/G1 phase were decreased, and those at G2/M phase were increased markedly ($P<0.01$). when SW480 cells were incubated with 80 $\mu\text{mol/L}$ quercetin for 48 h, the apoptosis rate increased from baseline of $2.68\% \pm 1.04\%$ to $13.32\% \pm 4.62\%$ ($P<0.01$). The expression of cyclin B1 protein could be down_ regulated by quercetin at concentrations of 40, 60, 80 $\mu\text{mol/L}$. **CONCLUSION:** Quercetin at lower concentrations could promote proliferation of colon carcinoma cell line SW480, while it could inhibit proliferation and induce apoptosis of these cells at higher concentrations. Quercetin might exert its anti_ tumor effect by blocking the cell cycle, inducing apoptosis and down_ regulation of cyclin B1 protein.

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