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槲皮素对**SMMC-7721**肝癌细胞**PI3K/AKT**信号通路影响的探讨

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中文摘要**:**目的**:** 观察槲皮素(quercetin)对人肝癌细胞SMMC-7721增殖与细胞凋亡的影响,探讨其对SMMC-7721细胞PI3K/AKT信号通路的影响。 方法**:** 采用MTT法检测槲皮素对SMMC-7721细胞生长的抑制,流式细胞术检测细胞周期变化,Western blot检测槲皮素对SMMC-7721细胞PI3K/AKT信号通路凋亡相关蛋白表达的影响。 结果**:** 槲皮素抑制SMMC-7721肝癌细胞增殖作用明显,且呈浓度和时间依赖性。顺铂和槲皮素40,80,160,320 μmol·L^{-1}48 h抑制率分别为62.19%,25.47%,27.18%,36.96%,51.28%。流式细胞术结果提示,槲皮素80,160,320 μmol·L^{-1}可使SMMC-7721肝癌细胞周期阻滞于G_0/G_1期。Western blot凋亡相关蛋白表达检测表明,药物组AKT的表达受抑制,PTEN,Caspase-9蛋白的表达率随着药物浓度的增加而增加。 结论**:** 槲皮素能诱导SMMC-7721肝癌细胞凋亡,其机制可能是使肝癌细胞SMMC-7721周期阻滞于G_0/G_1期,PTEN的过表达抑制AKT活化,激活Caspase-9从而促进细胞凋亡。

中文关键词**:**槲皮素 SMMC-7721肝癌细胞 PI3K-AKT信号通路 细胞凋亡

Influence of Quercetin on PI3K/AKT Signal Pathway of SMMC-7721 Hepatic Cancer Cells

Abstract:Objective: To investigate the influence of quercetin on the apoptosis of hepatic cancer cells SMMC-7721 and on PI3K/AKT signal pathways in SMMC-7721 cells. **Method:** Inhibitory effect of quercetin on SMMC-7721 cell growth was detected by MTT assay. Cell cycle changes were analyzed by flow cytometry (FCM). The Western blot test was employed for evaluating influence of quercetin on apoptosis related protein expression in PI3K/AKT signal pathways of SMMC-7721. **Result:** Quercetin inhibited cell proliferation of SMMC-7721 obviously, and in a concentration and time dependence manner. The inhibition rates of cisplatin and quercetin (40,80,160,320 μmol · L^{-1}, 48 h) were 62.19%, 25.47%, 27.18%, 36.96%, 51.28% respectively. FCM showed that 80,160,320 μmol · L^{-1} of quercetin could arrest SMMC-7721 cells in G_0/G_1 phase. Western blot showed that apoptosis related protein expression testing showed that the expression of AKT inhibited in the drug groups, and the protein expression of PTEN, caspase-9 increased with the drug concentration. **Conclusion:** Quercetin can induce apoptosis of SMMC-7721 cell, its mechanism could be related to hepatic cancer cells SMMC-7721 arrested in G_0/G_1 phase, the inhibition of AKT activation by PTEN gene over-expression, and the promotion of apoptosis by caspase-9 activation.

keywords:quercetin hepatic carcinoma cell lines SMMC-7721 PI3K/AKT signal pathway apoptosis

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