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PI3K信号通路对胃癌细胞P27磷酸化蛋白分布表达的影响

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Effects of PI3K Signal Pathway on the Distribution and Expression of Phosphorylated P27 in Gastric Cancer Cells

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摘要

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摘要 研究PI3K信号通路对胃癌BGC-823细胞中P27与磷酸化P27（p-P27）蛋白表达分布的影响。方法：LY294002处理BGC-823细胞，流式细胞术测定处理前后两组细胞周期分布。Western blotting测定两组细胞总蛋白、胞浆蛋白、核蛋白中P27与p-P27（Thr187、Thr157及Ser10）蛋白含量及分布特点。结果：处理后G1期细胞数明显增加（83.9% vs. 67.6%，P<0.01）。P27在总蛋白、胞浆蛋白和核蛋白中表达均显著增加（P<0.01，P<0.01，P<0.01）；p-P27（Ser10）在总蛋白、胞浆蛋白和核蛋白中表达均显著下降（P<0.01，P<0.01，P<0.01）；p-P27（Thr157）在总蛋白、胞浆蛋白中表达均显著下降（P<0.01，P<0.01），在核蛋白中下降不明显（P=0.482）；p-P27（Thr187）在总蛋白、胞浆蛋白中表达均下降，在核蛋白中表达增高，均无显著性差异（P=0.254，P=0.70，P=0.223）。结论：阻断PI3K通路可增加胃癌细胞P27蛋白表达，降低p-P27蛋白表达，改变P27和p-P27蛋白的核浆分布，可以使细胞周期停滞于G1期，诱导细胞凋亡。

关键词： PI3K信号通路 胃癌 P27蛋白 磷酸化P27蛋白

Abstract: To investigate the effects of PI3K pathway inhibition on the expression and distribution of P27 and phosphorylated P27 (p-P27) in the BGC-823 gastric cancer cell line. Methods: The cell line BGC-823 was cultivated and treated with LY294002, a PI3K pathway inhibitor. The cell cycle was determined using flow cytometry. The total cell, cytoplasmic, and nuclear expression of P27, p-P27 (Thr187), p-P27 (Thr157), and p-P27 (Ser10) were analyzed by Western blot analysis. Results: Inhibition of the PI3K pathway arrested cell cycle progression in the G1 phase (treated cells vs. control cells was 83.9 % vs. 67.6 %, P < 0.01). The total cell, cytoplasmic, and nuclear expression of P27 was significantly increased in the treated group compared with those in the control group (P < 0.01, P < 0.01, and P < 0.01, respectively). The total cell, cytoplasmic, and nuclear expression of p-P27 (Ser10) was significantly decreased in the treated group compared with that in the control group (P < 0.01, P < 0.01, and P < 0.01, respectively). The total cell and cytoplasmic expression of p-P27 (Thr157) was significantly decreased in the treated group compared with that in the control group (P < 0.01 and P < 0.01, respectively). The nuclear expression of p-P27 (Thr157) was decreased, but it did not reach statistical significance (P = 0.482). The total cell and cytoplasmic expression of p-P27 (Thr187) was decreased but the nuclear expression was increased. However, the differences were not statistically significant (P = 0.254, P = 0.70, and P = 0.223, respectively). Conclusion: Inhibiting the PI3K pathway in the BGC-823 gastric cancer cell line upregulates P27 expression and downregulates p-P27 expression. Moreover, the cytoplasmic and nuclear distribution of P27 and p-P27 were altered. Inhibiting the PI3K pathway induces G1 arrest and triggers the apoptosis of gastric cancer cells.

Key words:

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