



## 神经酰胺促胃癌SGC7901细胞凋亡的实验

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### Ceramide Promoting Apoptosis of SGC7901 Cell

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**摘要** 目的探讨神经酰胺(Ceramide, Cer)对胃癌SGC7901细胞的促凋亡作用及可能作用机制。方法体外培养人胃癌SGC7901细胞,分别给予Cer、顺铂(DDP); DDP联合Cer作用后,MTT检测单独使用Cer及联合DDP应用对SGC7901细胞增殖的影响,流式细胞仪检测细胞凋亡率,免疫组织化学染色、Western blot检测SGC7901细胞NF-κB、Bcl-2、Bax蛋白表达。结果Cer 2.5 μmol/L及以上时可以抑制细胞增殖,与对照组相比差异有统计学意义( $P<0.05$ )。Cer联合DDP后,联合用药作用强于单独DDP及Cer组( $P<0.05$ ),q值在24、48、72 h分别为1.05、1.01、0.99。Cer、DDP作用48 h可诱导SGC7901细胞凋亡,Cer 5 μmol/L、DDP 2.5 mg/L单独用药组及Cer 5 μmol/L联合DDP 2.5 mg/L组凋亡率分别为:(39.23±1.62)%、(47.27±1.13)%、(50.13±2.76)% ,与对照组[(18.46±1.64)%]相比差异有统计学意义( $P<0.05$ ),联合用药作用强于单独DDP及Cer组( $P<0.05$ )。NF-κB、Bcl-2在SGC7901细胞中较高表达[(74.10±2.69)%、(69.37±4.54)%],Bax在SGC7901细胞中表达较低[(24.60±3.73)%],Cer 5 μmol/L、DDP 2.5 mg/L单独用药组及Cer 5 μmol/L联合DDP 2.5 mg/L组NF-κB、Bcl-2阳性表达率降低(65.13±1.71、62.17±2.12、44.8±3.65;57.70±2.22、55.13±5.77、37.67±2.14),Bax表达率上调(33.80±1.10、35.50±2.27、51.73±3.76),Bcl-2/Bax比值降低(1.71±0.10、1.56±0.26、0.73±0.09),与对照组相比差别有统计学意义( $P<0.05$ ),联合用药作用强于单独DDP及Cer组( $P<0.05$ )。相关性分析显示NF-κB与Bcl-2呈正相关(Spearman's rho =0.9510,Prob>|t|=0.0000)。结论Cer通过下调NF-κB进而调节Bcl-2/Bax比值诱导SGC7901细胞凋亡。

**关键词:** SGC7901细胞 神经酰胺 核因子κB Bcl-2 Bax

**Abstract:** Objective

To investigate the role of ceramide on apoptosis of human gastric cancer SGC7901 cells and its possible mechanism. Methods SGC7901 cells were incubated and treated with the different concentration of ceramide, DDP, DDP in combination with ceramide. Then the inhibitory effect, the apoptosis rate and the expressions of NF-κB, Bcl-2, Bax were detected by MTT assay, flow cytometry, immunocytochemistry staining and western blot assay. Results The proliferation of SGC7901 cells was inhibited by ceramide at the concentration of 2.5 μmol/L compared with control group ( $P<0.05$ ). Ceramide in combination with DDP showed significant differences compared with ceramide and DDP group respectively ( $P<0.05$ ), the q value at 24, 48, 72h was 1.05, 1.01, 0.99 respectively. Ceramide, DDP could induce apoptosis of SGC7901, the apoptosis rate of ceramide 5 μmol/L, DDP 2.5 mg/L and Ceramide 5 μmol/L in combination with DDP 2.5 mg/L group were (39.23±1.62)%, (47.27±1.13)%, (50.13±2.76)% respectively, which showed significant difference compared with control group [(18.46±1.64)%] ( $P<0.05$ ). Ceramide in combination with DDP showed significant differences compared with ceramide and DDP group respectively ( $P<0.05$ ). The expressions of NF-κB, Bcl-2 were strong in SGC7901 [(74.10±2.69)%, (69.37±4.54)%], while Bax was weak [(24.60±3.73)%], the expressions of NF-κB, Bcl-2 decreased in Ceramide 5 μmol/L, DDP 2.5 mg/L group and Ceramide 5 μmol/L in combination with DDP 2.5 mg/L group

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(65.13±1.71,62.17±2.12,44.8±3.65,57.70±2.22,55.13±5.77,37.67±2.14),while Bax increased (33.80±1.10,35.50±2.27,51.73±3.76) ( $p<0.05$ ).The ratio of Bcl-2/Bax decreased after treated with ceramide,DDP and ceramide in combination with DDP.There is positive correlation between the expressions of NF- $\kappa$ B and Bcl-2 (Spearman  $s$  rho =0.9510,Prob > |t| =0.0000) .ConclusionCeramide can induce apoptosis by decreasing the expression of NF- $\kappa$ B via changing the ratio of Bcl-2/Bax in gastric cancer SGC7901 cells.

Key words: SGC7901 cells Ceramide NF- $\kappa$ B Bcl-2 Bax

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