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Effects of *BCL2* transfection on the cell cycle and proliferation of human GES-1 cells

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ABSTRACT. We investigated the effects of *BCL2* transfection on the cell cycle and proliferation of GES-1 cells. A pcDNA3-BCL2 plasmid was used to transfect GES-1 cell line human gastric epithelial cells. Clones were obtained by G418 screening. *BCL2*-positive cells were identified by fluorescence immunohistochemistry. The pcDNA3-BCL2 vectors carrying the *NeoR* gene were transfected into GES-1 cells, while the empty plasmid was transfected into the same cells as controls. *BCL2*-positive clones were screened by neomycin 418 (G418). Flow

cytometry was used to detect the cell cycle. Hematoxylin and eosin (H&E) staining revealed morphological changes, and the effects of *BCL2* transfection on cell proliferation were analyzed by cell counting and 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay. The plasmid pcDNA3-BCL2 was identified by restriction enzyme digestion. Different degrees of *BCL2* gene expression were detected in all seven clones. BCL2 was expressed mainly in the cytoplasm and the nuclear membrane. There were significantly more S-phase cells in the transfection group than in the controls. The morphology did not change after H&E staining. Cell growth was faster than in the controls after transfection for 6 days. At 24, 48, and 72 h after transfection, the A values were 4.15 ± 0.31, 5.98 ± 0.56, and 8.94 ± 0.79; those of the controls were 3.01 ± 0.20, 4.76 ± 0.52, and 7.69 ± 0.84; there was a significant difference between the two groups ($P < 0.05$). *BCL2* transfection increased GES-1 cells in the S phase; the GES-1 cells were stable and BCL2 expression was high, which promoted cell proliferation.

Key words: *BCL2* gene; Human gastric epithelial cells; GES-1 cells; Transfection; Cell cycle