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Characterization and effects of miR-21 expression in esophageal cancer

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ABSTRACT. The aim of this study was to investigate the expression of miR-21 in esophageal cancer and the impact of miR-21 on apoptosis, invasion, and the expression of target genes in esophageal cancer cells. Fluorescence quantitative polymerase chain reaction analysis was used to detect the expression of miR-21 in human esophageal tissues, adjacent tissues, and an esophageal cancer cell line (TE-13). The antisense miR-21 oligonucleotide was generated commercially using the solid-phase chemical synthesis method. Transient transfection was used to transfect esophageal cancer cells (TE-13 antisense and TE-13 control cells). Flow cytometry and Transwell cell assays were used to detect the apoptosis and invasion of esophageal cancer cells, respectively. The western blot method was used to detect the expression of PTEN, PDCD4, and K-ras proteins. These analyses determined that mir-21 expression significantly increased in esophageal cancer tissues and in TE-13 cells, and that this phenomenon was not associated with staging or lymph node metastasis. The apoptosis rate of TE-13 control cells was lower than that of antisense TE-13 cells indicating an enhanced

invasive ability. In tissues adjacent to esophageal cancer and in TE-13 antisense cells, the expression of PTEN and PDCD4 was found to be higher than that in the control group, whereas the expression of K-ras showed the opposite pattern. Together, these results suggest that miR-21 might be involved in the development and metastasis of esophageal cancer, through interaction with its *PDCD4* and *K-ras* target genes.

Key words: Esophageal cancer; MiR-21; Esophageal cancer cell lines; Transfection

