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Ciprofol suppresses proliferation, invasion and migration of human pancreatic cancer cells

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Abstract: Pancreatic cancer (PC) is heterogeneous cancer having a high death rate and poor prognosis. The perioperative variables, such as anesthetics, may affect the cancer progression. Ciprofol is an intravenous anesthetic widely used recently. We aimed to explore the influence of ciprofol on PC and investigate its possible pathway. The proliferation, migration and invasion roles and apoptosis of ciprofol in human PC cells were examined using methylthiazolyldiphenyl-tetrazolium bromide (MTT), transwell, and flow cytometery analysis. Then the putative targeted genes were examined using RNA-sequencing (RNA-seq) analysis. When differentially expressed genes (DEGs) were found, a protein-protein interaction (PPI) network and pathway analyses were made. Moreover, MMP1 gene expression was confirmed in PC cells using quantitative real-time PCR. PANC-1 cells of PC were significantly suppressed with ciprofol in a dose-dependent and time-dependent way, and 20μg/mL ciprofol significantly suppressed tumor cell aggressiveness. Additionally, the RNA-seq analysis demonstrated that ciprofol controls the expression of 929 DEGs. 5 of 20 hub genes with increased connection were selected. Survival analysis demonstrated that MMP1 may be involved in the carcinogenesis and establishment of PC, reflecting the possible roles associated with ciprofol. Moreover, one target miRNA (hsa-miR-330-5p) of MMP1 was identified. Ciprofol inhibits the aggressiveness of PC cells by multiple genes and pathways. The possible impact of ciprofol may be identified by controlling the expression of MMP1 associated with miRNAs.

Keywords: Ciprofol, pancreatic cancer, MMP1, micro-RNA, anesthesia