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INVESTIGATION OF FENTANYL PANCREATIC CANCER CELL PROLIFERATION AND CANCER STEM CELL DIFFERENTIATION

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Abstract

Pancreatic cancer is one of the most aggressive cancer due to the late diagnosis and failure to respond to the treatment despite advances in tumor biology and the development of new cancer therapeutic strategies. It has been reported that these characteristics of pancreatic cancer originate from cancer stem cells within the tumor mass. It has also been reported that the Fentanyl and some other mu-opioid receptors are involved. In this study, we determined the effect of Fentanyl on PANC-1 cells, by assessing the gene expression of cancer stem cell marker genes (Nanog, Oct4, and Sox2) and apoptosis-related genes (BAD, Bax, Bcl-2, and p53) by Quantitative RealTime PCR. The number of cancer stem cells was determined by flow cytometry. The results of our study showed that Fentanyl administration decreased the number of cancer and cancer stem cells in the PANC-1 cell population, decreased the gene expression of stem cell marker and increased the expression of apoptosis-related genes. These results indicate that Fentanyl, which is used routinely in the pain palliation of pancreatic cancer, can be considered as an option in the treatment of pancreatic cancer.

Keywords: Apoptosis, Cancer Stem Cell, Fentanyl, Pancreatic Cancer

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