

## **Oral Presentation**

### **Fentanyl İnduces the Differentiation of Cancer Stem Cell and Apoptosis**

**İbrahim Halil Yıldırım<sup>1</sup> \* , Tuğçe Duran<sup>2</sup>**

<sup>1</sup>Dicle Üniversitesi

<sup>2</sup>KTO Karatay Üniversitesi

\*Corresponding author: [ihyildirim@gmail.com](mailto:ihyildirim@gmail.com)

#### **Abstract**

Cancer stem cells are involved in the onset and development of cancer as well as in resistance to chemo and radiotherapy and also metastasis. Elimination of these cells or inducing to differentiation to normal cancer cells will be important in the treatment of cancer. There are some publications that report the positive effects of mu-opioid antagonists on cancer stem cell differentiation. Fentanyl is a mu-opioid analgesic that acts 80 times faster than morphine and is frequently used in cancer patients. In this study, we treated the pancreatic cancer cells, BxPC-3 with Fentanyl and compared the results with the untreated cell group. The number of stem cells in the untreated group was 6.2%, but this rate decreased to 2% in the Fentanyl treated group. In order to understand whether this is due to induction of cells due to apoptosis or induction of differentiation, we have evaluated the expressions of apoptosis markers Bad, Bax, Bcl-2 and p53, and stem cell markers Nanog, Oct4 and Sox2. Our results showed that Fentanyl induced both cell induction and cell differentiation in pancreatic cancer cells, BxPC-3.

**Keywords:** Cancer Stem Cell, Pancreatic Cancer, Bxpc-3, Apoptosis, Differentiation