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## ABSTRACT BOOK

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## OP-23

**SYNERGISTIC EFFECTS OF ACHILLEA BIEBERSTEINII AND 5-FU AGAINST COLORECTAL CANCER CELLS**

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**Object:** Colorectal cancer (CRC) is a major reason of cancer-related death, approximately 1.2 million new cases are reported each year in the worldwide and more than half die from the disease. 5-Fluorouracil (5-FU) is the backbone in the clinical treatment of advanced CRC. However, beside the antitumor effect most toxicities attributed to the drug and observed severe side effects. Therefore, novel treatments are still needed. 5-FU-based chemotherapeutic regimens are established as a fundamental standart treatment for metastatic colorectal cancer [1]. Antimicrobial, antioxidant, antiinflammatory, spasmolytic, antidiabetic, antiulcer, antitumor, choleric and hepatoprotective activity, and cytotoxic effects of different Achillea species have been previously reported [2]. *A. biebersteinii* Afan. (Asteraceae) is a perennial herb, villose, stems erect, simple or branched from the base; 30–60 cm high; leaves up to 10 cm; flowering period, April-May [3]. In this study, antiproliferative and apoptotic effects of *A. biebersteinii* and it's combination with 5-FU were analyzed with various methods.

**Material and Method:** HT-29 colorectal adenocarcinoma cell line were obtained from ATCC. Cell Proliferation Kit I (MTT) and Cell Death Detection Elisa Kit were purchased from Roche Diagnostics, Germany. Other chemicals and reagents were obtained from Sigma and Merck. Cell viability was determined by MTT assay. HT-29 cells were treated with the different concentrations of *A. biebersteinii*, 5-FU and *A. biebersteinii*+5-FU. Cell Death Detection Elisa Kit was used according to the manufacturer's protocol for detect the apoptotic effect. pTEN, AKT, MAPK, mTOR, VEGF Receptor 2, p53 and  $\beta$ -actin gene expression levels were measured by RT-PCR. Western blot analyze were used to determine pTEN, AKT, MAPK, mTOR, VEGF Receptor 2, p53 and  $\beta$ -actin protein levels.

**Results:** Results are provided as the mean of independent experiments, each assay were performed in triplicate.

**Conclusion:** In vitro cytotoxic and apoptotic effect of *A. biebersteinii*+5-FU showed that this combination can be a candidate for colorectal cancer treatment.

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**Keywords:** Achillea, apoptosis, 5-FU, mTOR

