

***Achillea santolina* and *Raphanus sativus* extracts downregulated NOTCH1, SIX1 and WNT1 developmental gene expressions in breast and colon cancer cell lines**

Reham Mohasseb¹, Reda Gaafar¹, Mohamed Abdel Baseer² and Mohamed L. Salem³

¹Botany Department, Faculty of Science, Tanta University, Egypt

²Botany and Microbiology, Faculty of Science, Al-Azhar University, Egypt

³Zoology Department, Faculty of Science, Tanta University, Tanta, Egypt

Background: Although anticancer treatment with chemotherapy is effective, cancer response occurs due mainly to reduction of cancer stem cells. The development of cancer stem cell is regulated by several genes including NOTCH1, SIX1 and WNT1. **Aim:** we have found recently that treatment of Caco2, HepG2 and MCF-7 with *Achillea santolina* or *Raphanus sativus* results antitumor effect. In this study we aimed to evaluate the effect of these natural product on the gene expressions NOTCH1, SIX1 and WNT1 in Caco2 and MCF-7. **Materials and Methods:** Colon adenocarcinoma cell line (Caco2) and Breast cancer cell line (MCF-7) as well as normal amniotic cell line (WISH) were treated with 110 IC50 concentration of *Achillea santolina* and *Raphanus sativus* extracts to compared to 110 IC50 of cisplatin as a reference chemotherapy drug. Total RNA was extracted after 72 hours of treatment and incubation then cDNA was prepared for reverse transcriptase PCR for NOTCH1, WNT1, and SIX1. **Results:** *R. sativus* treatment highly decreased NOTCH1 expression in MCF7 and Caco2 cell lines, while decreased SIX1 gene expression in Caco2 cell line and WNT1 in MCF7 cell line. On the other hand, *A. santolina* observably decreased the WNT1 gene expression in MCF7 cell line. **Conclusion:** The crude extracts of *R. sativus* decreased the developmental gene expression of NOTCH1, SIX1 in Caco2 cell line as same as on NOTCH1 and WNT1 in MCF-7 cell line more than cisplatin chemotherapy. While the *A. santolina* crude extract decrease the expression of WNT1 in MCF-7 cell line more than cisplatin chemotherapy.

Keywords: *A. santolina*; NOTCH1; *R. sativus*; SIX1; WNT1

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