

## **ABSTRACT**

### **EFFECT OF EMODIN IN HUMAN COLON CANCER CELL LINES THROUGH THE MITOCHONDRIAL SIGNALING PATHWAY**

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Emodin is an active anthraquinone compound found in roots and rhizomes of rhubarb. It is known that emodin inhibits tumor growth in many cancer types. Colon cancer has a specific importance for its incidence and mortality rates in the world and Turkey. In this study, HT-29 and Caco-2 cell lines, which were cultured from colon cancer tissues were used to investigate the effect of emodin on mitochondrial pathway of apoptosis. In accordance with this purpose, after emodin application to the cells, effective concentration was determined by MTT method. Morphologic observations of the cells after application were carried out by HO/PI staining method. In order to support probable apoptotic effect, Bax, Bcl-2 and mitochondrial and cytosolic cytochrome c levels were controlled by western blot. As a result, in HT-29 and Caco-2 cells, 40 $\mu$ M concentration was found to be the effective concentration by MTT test. Again in both cell lines, HO/PI staining results indicates the increase in apoptotic cell rate. These results were supported by the increase in Bax level and decrease in Bcl-2 level. In addition, while mitochondrial cytochrome c level was decreasing, cytosolic cytochrome c level has increased. According to these results, it can be concluded that emodin may activate mitochondrial pathway of apoptosis in HT-29 and Caco-2 colon cancer cell lines.

**Key words:** Apoptosis, cancer, HT-29, Caco-2, Bcl-2, Bax, cytochrome c, emodin