

## Polyphenolic Compound, Tannic Acid Inhibits proliferation of Human Colon Cancer and Induce Apoptosis

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**Aim of the study:** The aim of this study was to investigate the effects of plant phenolic compound tannic acid (TA) on proliferative, metastatic, invasive properties of colon cancer cell line, SW-620, as well as drug-metabolizing and antioxidant enzymes.

**Material and Methods:** Characterization of TA was done by using FT-IR and NMR. The effects of TA on metastatic, invasive and colony formation properties of colon cancer cells were investigated via wound healing, matrigel invasion and colony formation assays. The effects of TA on apoptosis-induced cell death were examined by flow cytometry following Annexin V-APC and 7-AAD staining. Effects of TA on drug-metabolizing and antioxidant enzymes gene and protein expressions were performed by using qRT-PCR and Western Blotting techniques, respectively.

**Results:** Cytotoxic effect of tannic acid was determined by using "Alamar Blue". TA was found to inhibit proliferation of SW-620 cells in a dose-dependent manner. The  $IC_{50}$  value was calculated as 7.2  $\mu$ M. In that  $IC_{50}$  concentration, TA treatment of cells inhibits migration (82%), invasion (73%) and colony formation (72%), respectively. TA increased early apoptosis rate 21% of SW-620 cells. The significant increase in the protein and mRNA expression levels of NQO1 and GSTM1 having effective role in metabolism of colon cancer treatment drugs and significant decrease in the protein and mRNA expression of CYP1A1, CYP2B6 and CYP3A4 having the role in androgen metabolism, reveal that TA can be used as an alternative and supporting treatment of colon cancer. The results obtained from this study shows that TA might be a good candidate for combinational therapy and highly effective strategy for reducing the occurrence of colon cancer

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**Keywords:** Tannic acid, Colon Cancer, Apoptosis, Proliferation, Migration.