

## Rooting Out Breast Cancer by Repressing ER Gene Expression: Correlating Bioactivity of Pomegranate Rind with Chemical Constituents Identified by HPLC-MS/MS

**Authors :** Alaa M. M. Badr Eldin, Marwa I. Ezzat, Mohammed S. Sedeek, Manal S. Afifi, Omar M. Sabry

**Abstract :** Cytotoxic activity of the total methanol extract against breast cancer cell line MCF-7 was amazing IC50 at 54 ug/ml. 130 polyphenolic compounds were tentatively identified in pomegranate peel (*Punica granatum* L.) methanol extract using HPLC-MS/MS technique. The antiestrogenic activity of the polyphenolic constituents found in pomegranate extract was confirmed experimentally in-vitro and by the in-silico molecular docking using gallic acid, ellagic acid, and Punicalagin as these are considered model compounds confirmed in pomegranate peel extract. The methanolic extract was found to suppress ER, TGF- $\beta$ , and NF-kB in-vitro gene expression strongly, and that was verified by qPCR and Western Blot gel electrophoresis techniques.

**Keywords :** HPLC-MS/MS, pomegranate, breast cancer, ovarian cancer, ER, TGF- $\beta$ , NF-kB

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